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ABSTRACT

This report provides descriptive statistical information from Phase III-B of the Beginning Teacher Evaluation Study. Within the sample of second and fifth grade teachers in classrooms in public schools in California, approximately six students were identified as target students to be studied during the school year. These students were observed approximately weekly during the period from January to May. The observers recorded student time within the subject matter areas of reading and mathematics, focusing on the content of student instructional tasks, the degree of difficulty of instructional tasks, and student engagement in these tasks. Academic Learning Time (ALT) is defined as time on tasks of intermediate difficulty for the students, directly related to the measures of achievement under study, during which a student is engaged in the instructional task. (Author)

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October, 1977

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Technical Note IV-3b

DESCRIPTION OF PATTERNS OF TEACHING BEHAVIOR WITHIN AND ACROSS CLASSES DURING THE B-C PERIOD

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Submitted to

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October, 1977

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PREFACE

The Far West Laboratory conducts research for the California Commission for Teacher Preparation and Licensing through funds provided by the National Institute of Education. The Commission has responsibility for certifying teachers and teacher training programs in the State of California. The research that the Commission sponsors is designed to help them understand what teacher behaviors or instructional activities are beneficial for students. With a reliable knowledge base in this area the Commission and the institutions that train teachers would be better able to provide training experiences based on empirical findings relating teacher behavior to student achievement.

In previous years, under the Commission's sponsorship, the Beginning Teacher Evaluation Study has conducted empirical research on teaching which has led to the development of a "model" of elementary school classroom instruction. The central construct of the model is academic learning time which is defined as the time a student spends engaged in tasks of intermediate difficulty that are relevant to a defined content area. Briefly, the model states that student achievement in a particular content area is a function of student academic learning time which is, in turn, a function of teaching behaviors and student entering characteristics. In this model, teaching behaviors are conceptualized in five functionally interrelated categories: diagnosis, prescription, presentation, monitoring, and feedback.

Phase III-B of the BTES includes a large field study of this model applied to instruction and learning of reading and mathematics at grades 2 and 5. Data were collected during the 1976-77 academic year. Three major

testing occasions were held in October, December, and May with a follow-up session in September, 1977. These testing occasions are referred to as occasions A, B, C, and D and serve to delimit major segments of the complete data set. Analyses will be reported for the A-B, B-C, and A-B-C-D periods. Within these periods, analyses will be carried out on the relationships between achievement and academic learning time and between academic learning time and teaching behaviors.

The assessment of teaching behaviors was carried out by direct observation, ratings, interviews, and questionnaires. The direct observation procedure, developed by the BTES staff, was the major source of interactive teaching behaviors. The Laboratory team which compiled and processed these data was thoughtfully directed by Nikola Filby. This technical note provides descriptive information from the observation system on the distribution of various teaching behaviors within and across classes for the B-C period. Analogous information for the A-B period is presented in Technical Note IV-3a.

These notes and others in the Phase III-B series are intended to present information on major data sources at several points in the analysis process. Subsequent notes will provide descriptive information on other data sources and report on relational analyses between elements of the model.

The data described in this report represent a remarkable amount of work. Our appreciation goes to each of the field workers, coders, computing staff members, teachers, students, and others who contributed to this effort. We give special recognition to the teachers and students in California schools who, by their voluntary participation, made this research possible.

Charles W. Fisher
Principal Investigator
Beginning Teacher Evaluation Study
October, 1977

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Introduction

This Technical Note presents descriptive data on observed instructional behavior in grade 2 and grade 5 classes participating in Phase III-B of the Beginning Teacher Evaluation Study (BTES). This report covers the B-C period (January to May, 1977). A previous report, IV-3a (Filby, 1977), presented comparable data for the A-B period (October to December, 1976).

The data reported here were collected from direct observation in each classroom once each week. The observation system focuses on target students and was designed to assess both student academic learning time (ALT) and any instructional behavior impinging on the student. Student ALT is described in Technical Notes IV-1a (Filby & Marliave, 1977) and IV-1b (Fisher, Filby & Marliave, 1977). In addition, Technical Note IV-1a presents a more complete description of instrumentation and data collection procedures for the full set of observation data.

The observation data on instructional behavior are rich and complex. The design of the observation system incorporates four crossed facets -- type of instructional move, source, focus, and setting. (These facets are described in the next section on Instrumentation.) There are 66 unique combinations of these facets allowed in the system. Each such combination is also coded as to subject matter -- reading or mathematics. Throughout this report, data will be presented separately for reading and mathematics.

In order to make sense of this complex data set, priority is given to some facets over others. The primary focus in on instructional moves within setting. We want to determine which instructional moves, that is, which specific types of instructional behavior, account for substantial portions of instructional time. In addition, we are interested in how

the pattern of instructional moves differs across setting. We want to look at differences between classes in the occurrence of particular instructional moves and at the variability within class in the occurrence of instructional moves. Two case study descriptions of individual classes will be given to show how these data on the occurrence of different instructional behaviors reflect the nature of instruction in the classroom. Correlation matrices are presented to summarize the patterns of co-occurrence of different instructional moves. Finally, we will present brief summary statistics on the observed source and focus of different instructional moves within setting.

Instrumentation

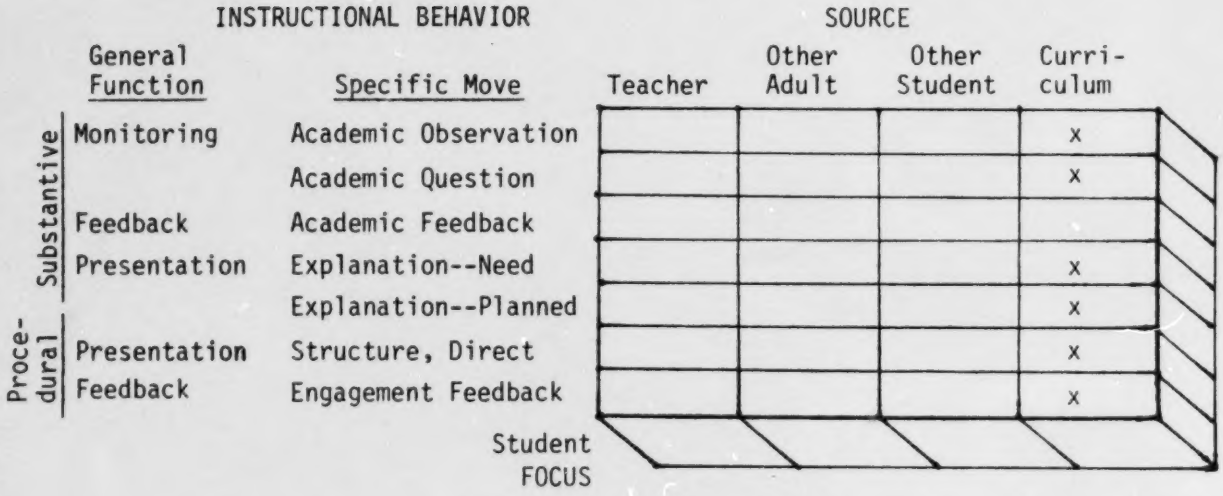
The observation system used in BTES is a time-based, rotating sample procedure focusing on target students. An event for each student is sampled about once every four minutes. Each event is coded on several dimensions. The development of the observation system is described in Technical Report I-5 (Marliave, Fisher, Filby & Dishaw, 1977), which includes a sample of the optically-scannable coding form and the observer's manual describing coding categories and observation procedures. Appendix A of this report reproduces the summary description of observation categories. The section which follows discusses the subset of coding categories dealing with instructional behavior.

Instructional Behavior. The goal of this portion of the observation system is to record the interactive instruction provided for each target student. Four facets of each observed instructional act are coded. These facets are diagrammed in Figure 1.

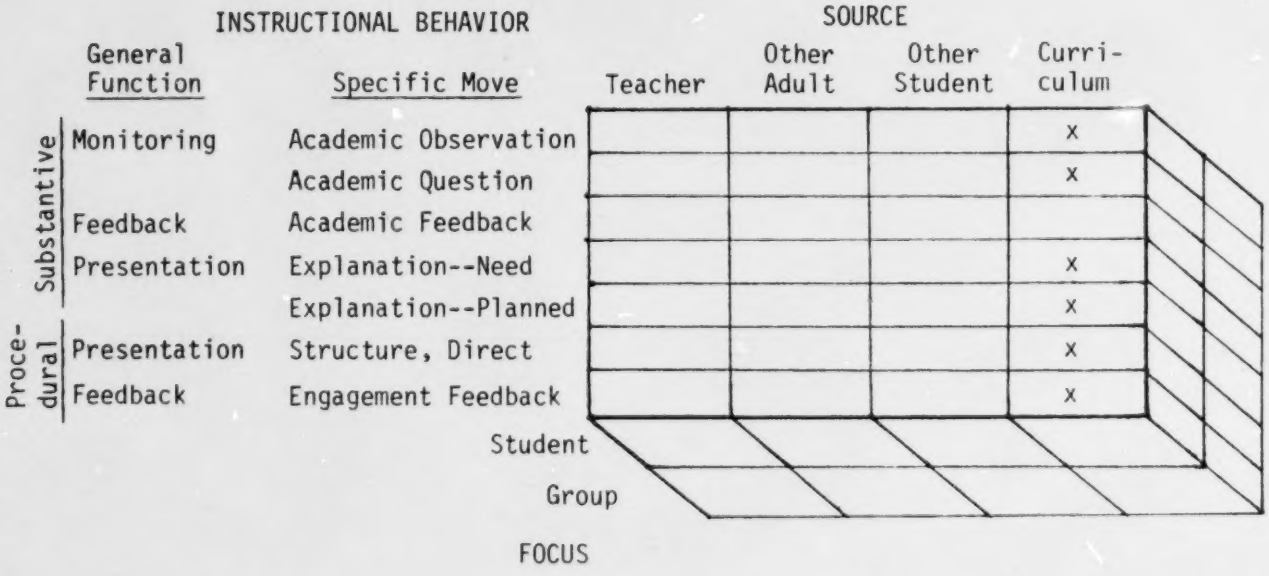
Figure 1

Matrix of Combinations of Observation Categories

SETTING = Self-Paced



SETTING = Other-Paced



x These combinations are not permissible within the observation system.

The primary facet identifies the nature of the instructional behavior impinging on the student. Seven instructional moves are coded in the system. See Appendix A for a brief description of these and other categories in the observation system.

The seven instructional moves can be grouped according to content and function, as shown in Figure 1. The first five moves involve substantive academic content. The last two involve general behavior or classroom procedure. The distinction is between presenting information, or checking on its acquisition, and telling the student what to do. It reflects a basic difference between focusing on what is to be learned and focusing on how the student should behave.

The seven moves can also be classified according to three general functions -- monitoring, feedback, and presentation. In monitoring, the instructor is obtaining information about how a student performs on a given task. He can do this by observing the student's ongoing performance or by asking a question to elicit an observable performance. The behavior can take place in different ways, but the function is to let the instructor know how the student is doing. In feedback, the information flow is from instructor to student. The instructor gives the student feedback about his performance. Academic feedback lets the student know whether his answer is right or wrong, or what the right answer is. Task engagement feedback tells the student that his behavior is acceptable or unacceptable, or what he should be doing. In presentation, the instructor provides extended information for the student. Academic presentation involves explanation of concepts or ideas. On the procedural side, the instructor describes the learning situation and asks the student to carry out particular tasks.

Each of these instructional moves can be carried out in one of two settings -- a self-paced setting, where individual students work independently at their own rate, or an other-paced setting, where students work as a group or in interaction with other students.

Each of these instructional moves can come from a variety of sources -- the teacher, another adult, another student, or from curriculum materials. Notice that only one move is allowed with a curriculum source -- the move of academic feedback. While all materials provide some presentation, materials differ in the extent to which they provide feedback to the student. Programmed materials, for instance, are specifically designed to provide ongoing feedback. We wanted to record student use of this source.

An instructional move also has an identifiable focus. The move can be aimed directly at the target student, as when the teacher asks that student a question. The move can be directed toward an entire group or toward some member of the group other than the target student. In this case the student is expected to receive the communication, but the impact is more indirect than when the individual student is on the line. Notice that in a self-paced setting the focus must be on the individual target student. This is a tutorial situation where the instructor helps an individual child. If the focus in on more than a single child, the setting cannot be self-paced.

Data Collection

The second grade sample included 139 students from 25 classes. The fifth grade sample included 123 students from 21 classes. This is an average of slightly less than six students per class.

All observation was carried out for an entire day. The goal was to observe one day a week in each classroom. Since the B-C period was fifteen weeks long, excluding spring vacation, this would produce fifteen observation days per class. Due to holidays, illness, etc., some classes had fewer than fifteen observations. In all cases, the data reported here are based on an average over the different B-C observation days.

For additional details on sample selection, observation training, and data processing procedures, see Technical Note IV-1a (Filby & Marliave, 1977).

Results

The metric: Percentages of the student's total time. The numbers entering into all calculations in this report are percentages of the student's total time in the subject matter. For instance, as you will see later, the average second grade student spends 21.3% of his reading time receiving substantive instruction in an other-paced setting.

These percentages represent a transformation of the original observation data. The data were originally collected in a time metric. In this metric one would talk about minutes per day in a particular category. For instance, a student might receive ten minutes per day of teacher feedback. This metric creates problems, however, for relational analyses. The goal of analysis is to relate instructional behavior to ALT. In such analyses, the straight time metric can produce misleading relationships. The overall amount of allocated time will strongly influence all time measures! One class may spend 40 minutes on reading, with 10 minutes of teacher feedback and 20 minutes of ALT. Another class may spend 80 minutes on reading, with 20 minutes of teacher feedback and 40 minutes

of ALT. Left in the time metric, these two classes would produce a positive relationship between feedback and ALT, but the real factor differentiating the two classes is simply the amount of allocated time. To avoid such spurious relationships, all data were transformed into percentages of total time in the subject matter. (Thus both classes in the above example would have 25% feedback and an ALT rate of 50%.)

One convenient way to interpret these percentages is in minutes per hour. Thinking of a classroom hour as 50 minutes (leaving off recess), the number of minutes per hour is half of the reported percentage. If a student has 10% feedback, this means he receives feedback for approximately 5 minutes out of each hour of reading.

The reader may be interested in the total amount of time actually accumulated in instructional behaviors in individual classes. Tables B1 and B2 in Appendix B list the average amount of time allocated to reading and mathematics in each class. These times served as the basis for calculating the percentages reported in the main body of this report. By combining the percentages and the mean daily time, the reader can arrive at estimates of actual time in instructional behavior. (For instance, since class 1 in grade 2 spent 106 minutes per day on reading, the average student in class 1 spent 6.8% of 106 minutes, or approximately 7 minutes per day, receiving substantive instruction in an other-paced setting.)

It should also be emphasized that these data are derived from a focus on individual target students not on the class or the teacher. A basic assumption in the BTES model is that it is essential to observe the world from the student's point of view in order to understand that student's achievement. The average student in class 1 spends 6.8% of his reading

time receiving substantive instruction in other-paced settings. This says nothing about how much of the teacher's time is spent giving instruction. The focus is on an individual student's instruction.

Class and quadrant means for instructional behavior within setting. Three tables of basic descriptive statistics are presented for each of the four quadrants. The first table describes substantive instructional behavior in other-paced settings. This is the largest subset of instructional behavior, in terms of the proportion of time accounted for. It represents academic instruction to a group of students. The second table describes substantive instructional behavior in self-paced settings (primarily seatwork). The third table compares substantive and procedural behavior in each of the two types of settings. This section of the report will discuss trends evident in these tables, for each quadrant in turn.

Tables 1, 2, and 3 present data on grade 2 reading. Table 1 describes percentages of time spent in the substantive instructional functions of monitoring, feedback, and presentation. The sum of all these functions is presented as "total substantive." Table entries for each variable are the class mean followed by the standard deviation, with the standard deviation in parentheses. Each row represents a particular class, with the class identifying number in the leftmost column. These identifying numbers remain constant within quadrant, so that it is possible to locate the same class in each of the tables. Class means are based on the identified target students in each class, usually five or six students. The row at the bottom of the table shows the means and standard deviations for the total sample of students in the quadrant. (At grade 2, total sample size is 139.)

Looking at Table 1, you can see that, on the average, a target student

Table 1

Substantive Behaviors in Other-Paced Settings, Grade 2 Reading, by Class
(B-C period)

Class	Monitoring			Feedback	Presentation			Total Substantive
	AO	AQ	Total		EN	EP	Total	
1	--	2.5 (0.8)	2.5 (0.8)	3.3 (1.4)	0.2 (0.2)	0.8 (0.4)	1.0 (0.5)	6.8 (1.6)
2	0.1 (0.2)	6.6 (1.6)	6.7 (1.6)	9.4 (2.9)	0.3 (0.6)	2.1 (0.9)	2.5 (1.4)	18.5 (3.6)
3	0.2 (0.2)	6.1 (2.2)	6.2 (2.1)	12.0 (3.0)	--	1.1 (0.6)	1.1 (0.6)	19.3 (4.2)
4	--	5.7 (1.7)	5.7 (1.7)	9.5 (2.1)	0.2 (0.5)	1.5 (0.7)	1.8 (1.0)	17.0 (3.6)
5	--	10.1 (2.8)	10.1 (2.8)	14.4 (2.2)	0.4 (0.3)	3.3 (0.6)	3.6 (0.6)	28.2 (3.2)
6	0.6 (1.0)	4.1 (2.3)	4.7 (2.9)	20.1 (4.4)	0.4 (0.5)	0.6 (0.5)	0.9 (0.9)	25.8 (6.0)
7	--	14.0 (0.8)	14.0 (0.8)	14.5 (1.7)	0.2 (0.2)	1.6 (0.5)	1.9 (0.6)	30.4 (1.9)
8	--	3.7 (1.5)	3.7 (1.5)	6.0 (2.6)	0.5 (0.5)	1.2 (0.5)	1.7 (0.8)	11.4 (3.6)
9	--	5.6 (1.5)	5.6 (1.5)	13.2 (1.7)	0.9 (0.5)	2.5 (0.9)	3.4 (1.0)	22.2 (1.7)
10	0.9 (0.7)	7.9 (2.2)	8.7 (2.3)	15.6 (2.2)	--	0.8 (0.6)	0.8 (0.6)	25.2 (1.7)
11	0.1 (0.2)	2.6 (0.7)	2.7 (0.6)	18.3 (2.0)	0.5 (0.3)	2.3 (1.2)	2.8 (1.1)	23.8 (2.2)
12	--	2.5 (0.8)	2.5 (0.8)	18.4 (5.2)	0.7 (0.3)	1.1 (0.4)	1.8 (0.4)	22.7 (5.2)
13	0.1 (0.2)	3.7 (1.2)	3.7 (1.2)	8.8 (4.2)	0.5 (0.4)	1.4 (0.4)	1.9 (0.6)	14.5 (3.1)
14	0.2 (0.1)	9.4 (1.5)	9.6 (1.5)	9.7 (1.0)	0.6 (0.4)	3.1 (1.1)	3.7 (1.0)	23.0 (1.7)
15	--	4.5 (0.9)	4.5 (0.9)	9.6 (2.9)	0.7 (0.2)	0.9 (0.4)	1.5 (0.3)	15.7 (3.3)
16	--	5.2 (2.3)	5.2 (2.3)	9.6 (2.6)	--	0.7 (0.5)	0.7 (0.5)	15.4 (2.3)
17	0.1 (0.2)	6.7 (1.9)	6.8 (2.0)	10.5 (2.3)	0.3 (0.3)	4.2 (1.4)	4.5 (1.3)	21.9 (3.2)
18	0.2 (0.2)	7.3 (0.9)	7.4 (0.8)	21.9 (2.2)	0.5 (0.2)	5.2 (1.5)	5.6 (1.6)	35.0 (2.1)
19	0.1 (0.1)	4.7 (1.5)	4.7 (1.5)	8.6 (2.0)	0.1 (0.2)	1.6 (0.8)	1.7 (0.7)	15.0 (3.2)
20	--	6.1 (1.9)	6.1 (1.9)	16.1 (1.9)	--	1.2 (1.2)	1.2 (1.2)	23.5 (4.5)
21	--	3.1 (1.3)	3.1 (1.3)	7.2 (1.1)	0.2 (0.3)	1.5 (1.4)	1.7 (1.6)	12.0 (1.7)
22	0.3 (0.3)	11.1 (2.0)	11.4 (1.9)	15.4 (3.1)	0.3 (0.3)	2.0 (0.8)	2.3 (0.7)	29.2 (4.1)
23	0.4 (0.6)	3.4 (1.0)	3.8 (1.4)	15.5 (7.2)	--	1.7 (0.9)	1.7 (0.9)	21.1 (8.6)
24	--	7.7 (0.9)	7.7 (0.9)	8.5 (4.3)	0.1 (0.2)	1.5 (1.3)	1.6 (1.2)	17.8 (4.2)
25	0.5 (0.9)	6.2 (1.8)	6.7 (1.6)	31.6 (1.2)	0.3 (0.6)	4.2 (1.5)	4.4 (1.9)	42.7 (1.6)
Total Sample	0.2 (0.4)	6.0 (3.2)	6.1 (3.2)	13.0 (6.3)	0.3 (0.4)	1.9 (1.5)	2.2 (1.6)	21.3 (8.2)

Entries are: Mean (Standard Deviation)
- symbolizes no observed time

Table 2

Substantive Behaviors in Self-Paced Settings, Grade 2 Reading, by Class
(B-C period)

Class	Monitoring			Feedback		Presentation		Total Substantive
	AO	AQ	Total		EN	EP	Total	
1	--	1.0 (1.1)	1.0 (1.1)	5.1 (1.4)	2.5 (2.0)	0.1 (0.1)	2.5 (2.1)	8.7 (3.7)
2	--	0.2 (0.6)	0.2 (0.6)	1.7 (0.9)	1.4 (0.4)	--	1.4 (0.4)	3.3 (0.8)
3	0.6 (0.4)	1.2 (0.4)	1.9 (0.4)	5.6 (1.3)	1.5 (0.7)	0.5 (0.4)	2.0 (1.1)	9.4 (1.7)
4	--	0.2 (0.5)	0.2 (0.5)	2.7 (1.4)	1.2 (0.6)	--	1.2 (0.6)	4.1 (1.5)
5	0.0 (0.1)	0.3 (0.3)	0.3 (0.2)	2.0 (0.9)	1.3 (1.0)	0.1 (0.3)	1.4 (1.1)	3.7 (1.3)
6	0.2 (0.4)	0.7 (0.8)	0.9 (1.0)	3.0 (1.3)	1.1 (0.7)	--	1.1 (0.7)	5.0 (2.7)
7	0.2 (0.2)	--	0.2 (0.2)	1.3 (0.4)	3.6 (1.1)	--	3.6 (1.1)	5.0 (1.2)
8	--	--	--	1.3 (0.8)	1.5 (1.5)	--	1.5 (1.5)	2.8 (1.7)
9	0.1 (0.2)	--	0.1 (0.2)	0.7 (0.4)	0.7 (0.4)	--	0.7 (0.4)	1.5 (0.5)
10	0.3 (0.2)	0.1 (0.2)	0.4 (0.3)	3.0 (1.5)	0.5 (0.3)	0.1 (0.2)	0.7 (0.4)	4.0 (1.7)
11	0.7 (0.4)	0.4 (0.3)	1.1 (0.4)	4.8 (1.0)	1.9 (0.8)	0.8 (0.3)	2.7 (0.9)	8.7 (1.9)
12	--	0.3 (0.3)	0.3 (0.3)	5.1 (3.2)	2.9 (1.6)	0.1 (0.2)	3.0 (1.6)	8.3 (4.8)
13	0.1 (0.2)	--	0.1 (0.2)	4.4 (3.0)	0.5 (0.6)	--	0.5 (0.6)	5.0 (3.0)
14	0.1 (0.2)	0.1 (0.1)	0.2 (0.3)	0.6 (0.4)	0.3 (0.5)	--	0.3 (0.5)	1.1 (0.7)
15	0.1 (0.2)	--	0.1 (0.2)	2.3 (1.0)	0.5 (0.8)	--	0.5 (0.8)	2.9 (0.8)
16	--	0.6 (0.1)	0.6 (0.1)	3.1 (2.3)	0.6 (0.5)	--	0.6 (0.5)	4.3 (2.1)
17	0.0 (0.1)	0.1 (0.1)	0.1 (0.1)	9.4 (2.2)	0.9 (0.5)	--	0.9 (0.5)	10.4 (2.0)
18	0.3 (0.4)	0.7 (0.7)	1.0 (0.9)	4.5 (1.1)	0.8 (0.5)	0.4 (0.4)	1.2 (0.9)	6.7 (2.3)
19	0.1 (0.2)	0.3 (0.2)	0.3 (0.3)	2.4 (0.9)	0.6 (0.3)	--	0.6 (0.3)	3.3 (1.1)
20	0.1 (0.2)	0.2 (0.4)	0.3 (0.3)	2.2 (0.7)	0.2 (0.2)	--	0.2 (0.2)	2.7 (0.5)
21	0.1 (0.2)	0.6 (0.7)	0.7 (0.8)	3.0 (1.2)	1.8 (1.0)	--	1.8 (1.0)	5.5 (2.4)
22	0.1 (0.1)	0.1 (0.2)	0.1 (0.3)	2.2 (3.0)	0.5 (0.4)	0.1 (0.1)	0.5 (0.4)	2.9 (3.4)
23	0.1 (0.1)	0.2 (0.2)	0.3 (0.2)	4.6 (2.6)	1.5 (1.0)	--	1.5 (1.0)	6.4 (2.6)
24	--	0.1 (0.2)	0.1 (0.2)	3.3 (1.5)	0.3 (0.5)	--	0.3 (0.5)	3.7 (1.7)
25	1.7 (0.4)	0.4 (0.5)	2.0 (0.5)	6.7 (2.1)	1.3 (0.9)	0.4 (0.6)	1.7 (1.4)	10.5 (2.5)
Total Sample	0.2 (0.4)	0.3 (0.5)	0.5 (0.7)	3.4 (2.5)	1.2 (1.1)	0.1 (0.3)	1.3 (1.2)	5.2 (3.3)

Table 3

Substantive and Procedural Behaviors, by Setting, in Grade 2 Reading, by Class (B-C Period)

Class	Self-Paced			Other-Paced		
	Total Substantive	Structure, Direct	Engagement Feedback	Total Substantive	Structure, Direct	Engagement Feedback
1	8.7 (3.7)	0.2 (0.3)	0.2 (0.3)	6.8 (1.6)	2.0 (1.0)	0.1 (0.1)
2	3.3 (0.8)	0.2 (0.4)	0.7 (0.9)	18.5 (3.6)	4.6 (1.2)	0.5 (0.5)
3	9.4 (1.7)	0.9 (0.6)	3.4 (2.3)	19.3 (4.2)	3.4 (2.6)	0.6 (0.4)
4	4.1 (1.5)	1.1 (0.6)	2.9 (1.5)	17.0 (3.6)	6.0 (1.9)	--
5	3.7 (1.3)	0.2 (0.3)	1.1 (0.7)	28.2 (3.2)	5.6 (1.7)	2.7 (1.4)
6	5.0 (2.7)	0.9 (0.6)	0.4 (0.4)	25.8 (6.0)	4.4 (2.0)	5.4 (4.0)
7	5.0 (1.2)	0.1 (0.2)	0.6 (0.4)	30.4 (1.9)	4.2 (2.0)	--
8	2.8 (1.7)	0.9 (1.0)	0.4 (0.6)	11.4 (3.6)	2.5 (1.5)	0.5 (0.8)
9	1.5 (0.5)	--	0.1 (0.2)	22.2 (1.7)	4.8 (3.3)	0.7 (0.4)
10	4.0 (1.7)	0.4 (0.5)	2.5 (1.9)	25.2 (1.7)	4.3 (2.8)	1.1 (0.6)
11	8.7 (1.9)	0.7 (0.5)	2.2 (0.9)	23.8 (2.2)	2.9 (1.7)	1.2 (0.7)
12	8.3 (4.8)	0.5 (0.4)	0.2 (0.3)	22.7 (5.2)	2.6 (0.8)	0.1 (0.2)
13	5.0 (3.0)	0.3 (0.2)	0.6 (0.4)	14.5 (3.1)	4.2 (1.7)	0.2 (0.2)
14	1.1 (0.7)	0.1 (0.2)	0.6 (0.7)	23.0 (1.7)	5.7 (3.3)	0.2 (0.3)
15	2.9 (0.8)	1.3 (0.6)	0.8 (1.1)	15.7 (3.3)	5.2 (0.9)	0.3 (0.3)
16	4.3 (2.1)	0.1 (0.2)	0.8 (1.4)	15.4 (2.3)	3.1 (2.2)	--
17	10.4 (2.0)	0.2 (0.2)	0.5 (0.2)	21.9 (3.2)	5.1 (1.5)	0.1 (0.2)
18	6.7 (2.3)	0.1 (0.3)	1.0 (0.8)	35.0 (2.1)	4.2 (2.3)	2.2 (0.5)
19	3.3 (1.1)	0.8 (0.6)	0.4 (0.8)	15.0 (3.2)	11.1 (3.5)	0.8 (0.6)
20	2.7 (0.5)	--	0.6 (0.5)	23.5 (4.5)	2.8 (1.1)	0.3 (0.2)
21	5.5 (2.4)	0.3 (0.4)	0.7 (0.4)	12.0 (1.7)	4.2 (0.7)	0.4 (0.3)
22	2.9 (3.4)	0.3 (0.3)	0.9 (1.1)	29.2 (4.1)	4.8 (1.5)	0.1 (0.2)
23	6.4 (2.6)	0.8 (0.7)	0.2 (0.3)	21.1 (8.6)	4.5 (1.5)	0.4 (0.4)
24	3.7 (1.7)	0.4 (0.5)	0.4 (0.4)	17.8 (4.2)	5.2 (2.7)	0.5 (0.4)
25	10.5 (2.5)	0.1 (0.2)	0.5 (0.4)	42.7 (1.6)	4.3 (3.9)	1.2 (0.3)
Total Sample	5.2 (3.3)	0.4 (0.5)	0.9 (1.2)	21.3 (8.2)	4.5 (2.6)	0.8 (1.5)

in class 1 received no academic observation, but spent 2.5% of his reading time receiving an academic question in an other-paced setting. Adding monitoring to feedback and presentation, on the average a target student in class 1 spent 6.8% of his reading time receiving some form of substantive instruction in an other-paced setting. This can be compared to the average for the total sample, shown in the bottom row, where you can see that in grade 2 reading, on the average, a student spends 21.3% of his time, or approximately 11 minutes per hour, receiving substantive academic instruction. Over half of this time, the instructional move is feedback. There is only a small amount of explanation of academic concepts or skills.

Notice the large amount of variability between classes shown in Table 1. At the low end, students in classes 1 and 8 spend only 6.8% and 11.4% of their time respectively, receiving substantive instructional behavior in this setting. At the high end, instruction is provided for as much as 35% or 42.7% of the student's reading time in classes 18 and 25.

The standard deviations provide an indicator of variability within class. A later section of this report presents student level data for two classes. These data give concrete examples of the individual student data which can be associated with a particular standard deviation. In general, four of the six students in a class are likely to be within one standard deviation of the class mean. Particularly where means are quite small, the standard deviation is often larger than the mean. This generally indicates that several students in the class had no time in a category while one or two students had a percent or two in that category.

Table 2 presents data on substantive behavior in self-paced settings for grade 2 reading. Notice that substantive behavior in self-paced settings constitutes a much smaller percentage of total reading time than

does substantive behavior in other-paced settings. This occurs in spite of the fact that a considerably larger amount of time is spent in self-paced settings. Tables B1 and B2 in Appendix B include data on the percentage of time in each setting for each class and for the sample as a whole. In grade 2, 63% of reading time is spent in self-paced activities and 5% of reading time is spent receiving substantive academic instruction while in self-paced settings. An average student, therefore, spends almost 60% of his reading time working independently, without substantive academic help.

Without taking away from the impact of this picture of the student's world, it should be pointed out that the demands of teaching a whole class of students make it difficult to dramatically improve this percentage. In self-paced settings, the instructor is by definition, moving from one student to another giving individual, tutorial help. If substantive behaviors were emitted continuously by one source (teacher) during self-paced settings and were divided equally among 30 or so students, each student would have 2% teacher interaction time. The observed total interaction time is 5%, rather than 2%, because of instruction from sources other than the teacher, such as aides or other students.

One interesting comparison between Table 1 and Table 2 is in the Presentation category. In other-paced settings the class mean for EP is, in every case, greater than the class mean for EN. Hence the presentation which occurs in the other-paced setting is usually preplanned, like a lecture. In self-paced settings this situation is reversed. In keeping with the tutorial situation, presentation is usually geared to the needs of the individual student. This trend holds up across quadrants.

Table 3 repeats information about total substantive behavior and adds

information about procedural behavior -- structuring/directing, and task engagement feedback. A noticeable percentage of time (4.5%) goes to giving directions in a group setting. The other new categories are quite small, on the average, although individual classes may accumulate a moderate amount of time in them.

Tables 4, 5, and 6 present analogous data for grade 2 mathematics. Overall compared to reading, a smaller proportion of mathematics time is spent in substantive academic instruction in other-paced settings (14.4% in mathematics compared to 21.3% in reading). Of the time spent, relatively more goes to explanation of material and less goes to feedback.

Comparing individual grade 2 classes across subject matter, it appears that there is moderate consistency in the percentage for total substantive behavior in other-paced settings. Classes 7, 9, 10, 11, 12, 20 and 25, for instance, would shift position noticeably in rank orderings of the classes. Apparently some teachers decide to teach reading and mathematics differently, with more human interaction in one case than the other.

Tables 7, 8, and 9 present data for grade 5 reading. The pattern is quite similar to that for grade 2 reading. Again feedback is the most frequent behavior. Notice that the amount of total substantive behavior in self-paced settings drops (from 5.2% to 1.9%) while the amount of time spent in those settings goes up (from 63% to 69%). Grade 5 students spend more time working independently, partly as a result of maturity and partly because fewer adults other than the teacher are available in the classes.

Tables 10, 11, and 12, presenting analogous information for grade 5 mathematics, complete the picture. As in grade 2, there is relatively more explanation in mathematics instruction than in reading instruction. As in grade 5 reading, there is relatively less instructional behavior

Table 4

Substantive Behaviors in Other-Paced Settings, Grade 2 Mathematics, by Class
(B-C period)

Class	Monitoring			Feedback	Presentation			Total Substantive
	AO	AQ	Total		EN	EP	Total	
1	--	3.2 (2.3)	3.2 (2.3)	2.0 (1.4)	--	0.3 (0.7)	0.3 (0.7)	5.4 (3.2)
2	--	4.9 (2.4)	4.9 (2.4)	1.6 (1.6)	1.9 (1.7)	2.7 (0.9)	4.5 (2.1)	11.1 (5.2)
3	0.1 (1.0)	3.3 (1.3)	4.0 (1.7)	9.2 (4.8)	0.7 (0.7)	4.4 (2.3)	5.0 (2.6)	18.2 (7.3)
4	--	7.5 (1.4)	7.5 (1.4)	2.6 (1.0)	0.5 (0.6)	4.9 (1.9)	5.4 (2.3)	15.4 (1.0)
5	--	8.0 (4.4)	8.0 (4.4)	12.2 (4.8)	--	7.5 (3.6)	7.5 (3.6)	27.6 (6.6)
6	--	7.3 (4.0)	7.3 (4.0)	3.8 (3.1)	0.8 (1.3)	1.2 (1.0)	2.0 (1.9)	13.0 (2.5)
7	0.4 (0.5)	2.7 (0.7)	3.1 (1.2)	2.6 (0.8)	0.6 (0.7)	4.8 (1.5)	5.4 (1.9)	11.1 (2.2)
8	--	2.8 (0.9)	2.8 (0.9)	0.5 (0.8)	0.7 (0.8)	2.6 (2.7)	3.3 (2.6)	6.5 (3.8)
9	0.1 (0.3)	1.0 (0.7)	1.2 (0.9)	2.0 (1.3)	0.2 (0.4)	0.9 (0.7)	1.1 (0.4)	4.3 (2.0)
10	0.4 (0.6)	2.1 (2.2)	2.5 (2.2)	2.7 (1.1)	1.4 (1.0)	3.1 (1.7)	4.4 (2.2)	9.7 (2.7)
11	--	1.6 (0.8)	1.6 (0.8)	2.6 (0.6)	0.9 (0.9)	1.4 (1.2)	2.3 (1.0)	6.6 (1.3)
12	--	2.4 (2.2)	2.4 (2.2)	3.9 (1.8)	--	1.9 (1.0)	1.9 (1.0)	8.3 (1.6)
13	--	3.5 (0.7)	3.5 (0.7)	1.8 (0.6)	0.3 (0.4)	2.9 (1.4)	3.2 (1.7)	8.5 (1.4)
14	--	18.8 (4.4)	18.8 (4.4)	7.2 (3.3)	2.2 (2.6)	12.5 (2.0)	14.7 (3.0)	40.7 (2.3)
15	--	1.7 (0.6)	1.7 (0.6)	8.2 (3.0)	0.1 (0.3)	1.4 (0.8)	1.5 (0.9)	11.4 (3.4)
16	--	7.6 (2.2)	7.6 (2.2)	6.7 (1.7)	--	0.5 (1.1)	0.5 (1.1)	14.8 (2.0)
17	--	11.1 (1.5)	11.1 (1.5)	10.0 (3.3)	1.0 (1.0)	6.4 (2.2)	7.4 (2.1)	28.5 (4.3)
18	0.1 (0.3)	8.8 (2.8)	8.9 (3.1)	8.4 (1.8)	1.6 (1.3)	4.4 (1.9)	6.0 (2.0)	23.3 (2.7)
19	--	1.5 (1.7)	1.5 (1.7)	1.1 (0.8)	2.3 (1.4)	1.4 (0.7)	3.7 (1.2)	6.3 (2.5)
20	--	0.3 (0.4)	0.3 (0.4)	4.0 (0.5)	0.7 (0.4)	1.0 (0.7)	1.7 (1.0)	6.0 (1.7)
21	--	6.0 (1.2)	6.0 (1.2)	4.2 (1.4)	0.7 (0.5)	2.3 (1.6)	3.5 (2.0)	13.7 (3.5)
22	0.1 (0.3)	11.1 (3.7)	11.2 (3.6)	8.1 (2.3)	1.6 (0.5)	2.9 (0.9)	4.6 (0.9)	23.8 (5.2)
23	0.5 (0.5)	2.1 (1.5)	2.6 (1.4)	11.5 (2.6)	2.5 (4.1)	3.9 (1.5)	6.5 (3.7)	20.5 (3.0)
24	--	5.9 (3.0)	5.9 (3.0)	5.6 (1.6)	--	3.8 (1.0)	3.8 (1.0)	15.3 (4.3)
25	--	0.8 (0.7)	0.8 (0.7)	0.7 (0.9)	2.4 (2.3)	2.1 (2.4)	4.5 (1.7)	6.0 (2.1)
Total Sample	0.1 (0.3)	5.1 (4.8)	5.2 (4.8)	4.9 (4.1)	0.9 (1.5)	3.3 (3.1)	4.2 (3.5)	14.4 (9.7)

Entries are: Mean (Standard Deviation)
- symbolizes no observed time

Table 5

Substantive Behaviors in Self-Paced Settings, Grade 2 Mathematics, by Class
(B-C period)

Class	Monitoring			Feedback	Presentation			Total Substantive
	AO	AQ	Total		EN	EP	Total	
1	--	--	--	2.9 (3.2)	4.5 (4.2)	--	4.6 (4.2)	7.5 (6.5)
2	--	0.2 (0.4)	0.2 (0.4)	4.2 (3.2)	1.6 (1.4)	--	1.6 (1.4)	6.0 (2.7)
3	2.8 (1.8)	0.7 (0.5)	3.5 (1.4)	4.7 (2.4)	3.1 (1.1)	0.5 (0.4)	3.6 (1.3)	11.8 (2.3)
4	0.2 (0.3)	0.8 (0.6)	0.5 (1.0)	2.2 (0.8)	1.3 (0.7)	--	1.3 (0.7)	4.0 (1.5)
5	0.2 (0.5)	--	0.2 (0.5)	0.8 (1.3)	1.6 (1.5)	--	1.6 (1.5)	2.6 (3.1)
6	0.6 (1.4)	--	0.6 (1.4)	0.5 (0.8)	1.9 (1.8)	--	1.9 (1.8)	3.0 (2.6)
7	--	--	--	2.2 (1.4)	2.9 (1.1)	--	2.9 (1.1)	5.2 (1.5)
8	--	--	--	0.8 (1.0)	3.5 (1.6)	--	3.5 (1.6)	4.4 (1.7)
9	0.1 (0.3)	--	0.1 (0.3)	2.7 (2.3)	3.2 (2.6)	0.2 (0.4)	3.3 (2.5)	6.2 (4.5)
10	1.4 (1.1)	--	1.4 (1.1)	1.4 (1.0)	2.3 (2.2)	0.7 (1.2)	3.0 (3.3)	5.8 (4.1)
11	0.4 (0.6)	0.3 (0.6)	0.7 (0.6)	2.2 (0.8)	1.2 (1.3)	0.5 (0.6)	1.7 (1.6)	4.6 (2.2)
12	0.2 (0.4)	0.1 (0.4)	0.3 (0.5)	4.3 (2.2)	2.9 (2.4)	--	2.9 (2.4)	7.5 (2.6)
13	--	0.3 (0.4)	0.3 (0.4)	1.6 (1.5)	1.1 (0.7)	--	1.1 (0.7)	3.1 (1.6)
14	--	0.2 (0.4)	0.2 (0.4)	0.3 (0.5)	0.9 (1.0)	--	0.9 (1.0)	1.4 (1.4)
15	0.1 (0.3)	--	0.1 (0.3)	1.2 (1.0)	2.1 (1.2)	--	2.1 (1.2)	3.4 (1.8)
16	--	--	--	2.3 (2.4)	--	--	--	2.3 (2.4)
17	0.3 (0.6)	--	0.3 (0.6)	0.7 (0.9)	0.6 (0.7)	--	0.6 (0.7)	1.6 (1.1)
18	0.5 (0.8)	0.4 (0.7)	0.9 (0.8)	2.7 (1.0)	3.7 (3.1)	1.3 (1.2)	4.9 (3.2)	8.6 (3.6)
19	--	--	--	3.5 (3.5)	2.6 (0.9)	0.3 (0.7)	2.9 (1.4)	6.4 (4.6)
20	0.5 (0.5)	0.3 (0.4)	0.8 (0.8)	7.0 (1.5)	1.7 (1.9)	--	1.7 (1.9)	9.5 (2.5)
21	--	0.2 (0.5)	0.2 (0.5)	1.9 (1.8)	2.3 (1.2)	--	2.3 (1.2)	4.4 (1.5)
22	--	0.1 (0.3)	0.1 (0.3)	2.5 (1.5)	1.0 (1.3)	--	1.0 (1.3)	3.6 (2.3)
23	0.2 (0.4)	--	0.2 (0.4)	1.4 (1.0)	2.0 (1.2)	--	2.0 (1.2)	3.5 (1.7)
24	--	--	--	0.9 (1.0)	1.1 (1.2)	--	1.1 (1.2)	2.0 (2.0)
25	1.0 (0.8)	--	1.0 (0.8)	5.6 (2.2)	7.5 (2.6)	2.2 (0.9)	9.7 (3.4)	16.3 (1.5)
Total Sample	0.3 (0.8)	0.1 (0.3)	0.4 (0.9)	2.4 (2.3)	2.2 (2.2)	0.2 (0.6)	2.4 (2.5)	5.2 (4.1)

Table 6

Substantive and Procedural Behaviors, by Setting, in Grade 2 Mathematics, by Class (B-C Period)

Class	Self-Paced			Other-Paced		
	Total Substantive	Structure, Direct	Engagement Feedback	Total Substantive	Structure, Direct	Engagement Feedback
1	7.5 (6.5)	--	0.3 (0.8)	5.4 (3.2)	2.1 (2.1)	0.3 (0.8)
2	6.0 (2.7)	0.2 (0.4)	1.7 (1.9)	11.1 (5.2)	2.0 (1.6)	--
3	11.8 (2.3)	0.2 (0.4)	4.2 (3.2)	18.2 (7.3)	3.7 (4.2)	1.9 (1.3)
4	4.0 (1.5)	0.5 (0.3)	0.4 (0.3)	15.4 (1.0)	6.4 (0.6)	0.2 (0.4)
5	2.6 (3.1)	--	0.3 (0.7)	27.6 (6.6)	3.7 (2.8)	2.6 (1.1)
6	3.0 (2.6)	0.5 (0.8)	0.3 (0.6)	13.0 (2.5)	6.8 (2.9)	--
7	5.2 (1.5)	0.6 (0.6)	0.6 (0.6)	11.1 (2.2)	4.8 (1.6)	-
8	4.4 (1.7)	0.6 (1.0)	0.6 (0.7)	6.5 (3.8)	0.6 (0.5)	0.4 (0.6)
9	6.2 (4.5)	0.2 (0.4)	0.4 (0.9)	4.3 (2.0)	1.6 (1.4)	1.3 (0.9)
10	5.8 (4.1)	0.2 (0.5)	2.7 (3.6)	9.7 (2.7)	3.2 (1.8)	1.1 (0.7)
11	4.6 (2.2)	1.3 (1.9)	2.8 (1.5)	6.6 (1.3)	2.4 (1.7)	0.5 (0.5)
12	7.5 (2.6)	0.3 (0.5)	0.4 (0.6)	8.2 (1.6)	2.1 (2.4)	--
13	3.1 (1.6)	0.2 (0.4)	0.5 (0.7)	8.5 (1.4)	4.3 (2.0)	0.2 (0.3)
14	1.4 (1.4)	--	0.3 (0.5)	40.7 (2.3)	3.3 (1.7)	1.0 (1.3)
15	3.4 (1.8)	0.7 (0.6)	0.3 (0.4)	11.4 (3.4)	2.2 (1.7)	1.7 (1.7)
16	2.3 (2.4)	--	--	14.8 (2.0)	3.5 (3.5)	--
17	1.6 (1.1)	0.2 (0.4)	0.2 (0.6)	28.5 (4.3)	7.2 (3.8)	--
18	8.6 (3.6)	0.1 (0.3)	1.0 (0.9)	23.3 (2.7)	1.6 (1.2)	1.5 (0.6)
19	6.4 (4.6)	0.6 (0.9)	1.2 (1.4)	6.3 (2.5)	10.8 (4.9)	0.5 (0.8)
20	9.5 (2.5)	0.5 (0.5)	1.3 (1.1)	6.0 (1.7)	1.2 (1.3)	--
21	4.4 (1.5)	1.1 (0.7)	1.5 (1.4)	13.7 (3.5)	1.3 (0.9)	0.3 (0.5)
22	3.6 (2.3)	0.1 (0.3)	0.8 (1.0)	23.8 (5.2)	6.2 (2.4)	0.4 (0.7)
23	3.5 (1.7)	0.8 (0.4)	0.3 (0.8)	20.5 (3.0)	4.5 (2.0)	0.2 (0.4)
24	2.0 (2.0)	--	1.7 (2.1)	15.3 (4.3)	2.8 (0.7)	0.4 (0.5)
25	16.3 (1.5)	0.9 (1.1)	1.7 (1.3)	6.0 (2.1)	1.3 (1.2)	0.6 (0.4)
Total Sample	5.2 (4.1)	0.4 (0.7)	1.0 (1.6)	14.4 (9.7)	3.6 (3.2)	0.6 (1.0)

Table 7

Substantive Behaviors in Other-Paced Settings, Grade 5 Reading, by Class
(B-C period)

Class	Monitoring			Feedback	Presentation			Total Substantive
	AO	AQ	Total		EN	EP	Total	
1	--	6.3 (0.9)	6.3 (0.9)	15.0 (0.4)	0.6 (0.7)	4.5 (2.1)	5.1 (2.0)	26.4 (1.9)
3	0.1 (0.2)	13.6 (1.7)	13.7 (1.6)	10.1 (1.5)	1.0 (0.6)	3.5 (1.4)	4.5 (1.0)	28.3 (2.0)
4	--	5.7 (1.6)	5.7 (1.6)	16.3 (1.6)	0.6 (0.5)	1.9 (0.7)	2.5 (1.0)	24.5 (1.9)
5	--	3.2 (0.6)	3.2 (0.6)	11.0 (1.8)	0.1 (0.2)	1.0 (0.4)	1.1 (0.2)	15.3 (1.6)
6	--	1.1 (1.1)	1.1 (1.1)	3.2 (1.8)	0.3 (0.5)	0.7 (0.5)	1.1 (0.7)	5.4 (3.4)
8	--	6.6 (1.1)	6.6 (1.1)	6.8 (1.8)	0.4 (0.4)	1.7 (0.3)	2.1 (0.7)	15.5 (1.6)
9	--	4.5 (0.5)	4.5 (0.5)	13.2 (2.0)	0.6 (0.2)	3.6 (1.0)	4.1 (0.8)	21.8 (2.5)
10	--	2.1 (0.4)	2.1 (0.4)	16.2 (2.6)	0.3 (0.2)	1.2 (0.6)	1.5 (0.7)	19.7 (2.4)
11	0.1 (0.2)	5.2 (0.4)	5.4 (0.6)	18.0 (1.2)	0.2 (0.4)	1.0 (0.4)	1.3 (0.3)	24.7 (0.7)
12	0.0 (0.1)	3.7 (0.7)	3.8 (0.7)	17.8 (2.2)	0.1 (0.1)	0.8 (0.5)	0.9 (0.5)	22.4 (2.9)
14	--	7.9 (1.5)	7.9 (1.5)	9.3 (1.4)	0.2 (0.2)	1.6 (0.3)	1.8 (0.3)	19.0 (2.4)
16	0.1 (0.1)	3.7 (0.9)	3.7 (0.9)	25.4 (6.0)	0.1 (0.2)	3.4 (1.6)	3.5 (1.7)	32.6 (6.8)
17	--	5.1 (1.2)	5.1 (1.2)	6.9 (1.1)	0.2 (0.3)	0.5 (0.4)	0.7 (0.6)	12.7 (1.8)
18	0.1 (0.2)	2.5 (1.1)	2.6 (1.2)	11.7 (2.0)	--	0.3 (0.2)	0.3 (0.2)	14.7 (2.8)
19	--	5.8 (1.1)	5.8 (1.1)	6.4 (1.4)	0.1 (0.2)	0.6 (0.3)	0.7 (0.5)	12.9 (1.5)
21	--	4.5 (2.7)	4.5 (2.7)	14.7 (2.8)	0.1 (0.2)	1.5 (1.0)	1.6 (0.9)	20.8 (3.0)
23	0.0 (0.1)	9.5 (1.9)	9.5 (2.0)	8.7 (1.6)	0.6 (0.5)	1.6 (0.3)	2.1 (0.6)	20.3 (2.5)
24	--	0.4 (0.4)	0.4 (0.4)	4.5 (3.0)	0.1 (0.2)	4.1 (3.2)	4.1 (3.2)	9.1 (3.1)
25	--	3.2 (0.6)	3.2 (0.6)	14.6 (1.2)	0.2 (0.2)	0.6 (0.3)	0.8 (0.3)	18.6 (0.9)
26	--	2.4 (1.1)	2.4 (1.1)	3.7 (1.9)	--	3.5 (1.0)	3.5 (1.0)	9.6 (1.7)
27	0.8 (0.2)	8.1 (1.5)	8.9 (1.7)	15.3 (3.2)	0.8 (0.5)	7.9 (1.6)	8.8 (1.5)	33.0 (2.0)
Total Sample	0.1 (0.2)	5.0 (3.2)	5.1 (3.3)	12.1 (5.8)	0.3 (0.4)	2.1 (2.1)	2.4 (2.2)	19.6 (7.6)

Entries are: Mean (Standard Deviation)
- symbolizes no observed time

Table 8

Substantive Behaviors in Self-Paced Settings, Grade 5 Reading, by Class
(B-C period)

Class	Monitoring			Feedback	Presentation			Total Substantive
	AO	AQ	Total		EN	EP	Total	
1	--	0.1 (0.2)	0.1 (0.2)	1.3 (0.5)	0.7 (0.4)	--	0.7 (0.4)	2.0 (0.9)
3	0.5 (0.3)	0.2 (0.3)	0.7 (0.2)	2.5 (1.4)	0.6 (1.2)	0.4 (0.6)	1.0 (1.3)	4.2 (1.4)
4	--	--	--	0.7 (0.9)	0.3 (0.2)	--	0.3 (0.2)	1.0 (0.8)
5	0.1 (0.2)	--	0.1 (0.2)	0.7 (0.3)	0.2 (0.3)	--	0.2 (0.3)	1.1 (0.2)
6	--	--	--	0.3 (0.5)	0.5 (0.6)	--	0.5 (0.6)	0.9 (0.9)
8	--	0.1 (0.1)	0.1 (0.1)	0.6 (0.4)	0.5 (0.4)	--	0.5 (0.4)	1.2 (0.2)
9	0.1 (0.1)	0.1 (0.1)	0.1 (0.2)	2.5 (0.9)	0.6 (0.4)	--	0.6 (0.4)	3.2 (0.9)
10	0.0 (0.1)	0.3 (0.2)	0.3 (0.3)	3.5 (0.7)	0.1 (0.1)	--	0.1 (0.1)	3.9 (0.8)
11	--	--	--	0.5 (0.5)	0.6 (0.5)	0.0 (0.1)	0.6 (0.6)	1.1 (0.5)
12	--	0.1 (0.2)	0.1 (0.2)	0.9 (0.6)	0.6 (0.4)	--	0.6 (0.4)	1.7 (0.9)
14	--	0.0 (0.1)	0.0 (0.1)	0.3 (0.2)	0.3 (0.4)	--	0.3 (0.4)	0.6 (0.5)
16	0.7 (0.6)	--	0.7 (0.6)	0.6 (0.5)	0.6 (0.4)	0.1 (0.1)	0.6 (0.5)	1.8 (1.0)
17	--	--	--	2.3 (3.0)	0.7 (0.9)	0.1 (0.2)	0.9 (1.0)	3.1 (3.9)
18	0.2 (0.4)	0.1 (0.2)	0.3 (0.5)	1.7 (1.3)	0.2 (0.3)	--	0.2 (0.3)	2.3 (1.2)
19	0.1 (0.1)	0.1 (0.1)	0.1 (0.2)	0.8 (0.6)	0.1 (0.1)	0.1 (0.1)	0.1 (0.2)	1.1 (0.8)
21	0.1 (0.1)	0.3 (0.6)	0.4 (0.7)	0.4 (0.6)	1.0 (1.1)	0.0 (0.1)	1.1 (1.2)	1.8 (1.8)
23	--	--	-	0.6 (0.9)	--	0.1 (0.3)	0.1 (0.3)	0.8 (0.9)
24	--	0.1 (0.2)	0.1 (0.2)	1.0 (1.9)	0.6 (0.5)	0.1 (0.3)	0.7 (0.4)	1.9 (1.9)
25	--	--	--	0.2 (0.3)	0.1 (0.3)	--	0.1 (0.3)	0.4 (0.6)
26	--	0.6 (0.4)	0.6 (0.4)	2.3 (2.1)	0.6 (0.9)	--	0.6 (0.9)	3.4 (2.8)
27	--	0.1 (0.2)	0.1 (0.2)	1.2 (0.7)	0.3 (0.3)	0.0 (0.1)	0.3 (0.3)	1.6 (0.7)
Total Sample	0.1 (0.2)	0.1 (0.2)	0.2 (0.4)	1.2 (1.4)	0.4 (0.6)	0.0 (0.2)	0.5 (0.6)	1.9 (1.7)

Entries are: Mean (Standard Deviation)
- symbolizes no observed time

Table 9

Substantive and Procedural Behaviors, by Setting, in Grade 5 Reading, by Class (B-C Period)

	Self-Paced			Other-Paced		
Class	Total Substantive	Structure, Direct	Engagement Feedback	Total Substantive	Structure, Direct	Engagement Feedback
1	2.0 (0.9)	0.4 (0.2)	0.4 (0.8)	26.4 (1.9)	2.0 (0.9)	0.4 (0.3)
3	4.2 (1.4)	0.1 (0.3)	0.6 (0.4)	28.3 (2.0)	3.0 (3.1)	1.2 (0.9)
4	1.0 (0.8)	-	0.4 (0.7)	24.5 (1.9)	3.4 (2.0)	0.9 (1.0)
5	1.1 (0.2)	0.1 (0.2)	0.6 (1.0)	15.3 (1.6)	2.3 (0.7)	0.8 (0.6)
6	0.9 (0.9)	0.3 (0.4)	0.8 (0.8)	5.4 (3.4)	5.3 (2.2)	1.9 (1.3)
8	1.2 (0.2)	-	0.3 (0.6)	15.5 (1.6)	5.7 (1.8)	0.3 (0.3)
9	3.2 (0.9)	0.1 (0.1)	0.4 (0.4)	21.8 (2.5)	3.6 (0.9)	0.1 (0.2)
10	3.9 (0.8)	0.1 (0.1)	0.1 (0.1)	19.7 (2.4)	2.7 (1.2)	0.1 (0.2)
11	1.1 (0.5)	-	0.0 (0.1)	24.7 (0.7)	2.8 (1.2)	0.2 (0.2)
12	1.7 (0.9)	0.2 (0.2)	0.4 (0.6)	22.4 (2.9)	3.8 (1.2)	0.0 (0.1)
14	0.6 (0.5)	0.0 (0.1)	0.4 (0.3)	19.0 (2.4)	3.3 (1.6)	0.5 (0.4)
16	1.8 (1.0)	-	0.6 (1.2)	32.6 (6.8)	8.4 (1.6)	0.4 (0.3)
17	3.1 (3.9)	0.3 (0.3)	0.8 (1.5)	12.7 (1.8)	3.2 (1.9)	0.1 (0.2)
18	2.3 (1.2)	0.0 (0.1)	0.5 (0.5)	14.7 (2.8)	3.1 (1.3)	0.1 (0.1)
19	1.1 (0.8)	0.2 (0.3)	1.0 (2.1)	12.9 (1.5)	3.1 (0.7)	0.6 (0.5)
21	1.8 (1.8)	0.2 (0.2)	0.3 (0.3)	20.8 (3.0)	4.9 (2.7)	0.9 (0.3)
23	0.8 (0.9)	-	0.0 (0.1)	20.3 (2.5)	1.1 (0.9)	0.4 (0.1)
24	1.9 (1.9)	0.6 (0.5)	0.2 (0.6)	9.1 (3.1)	1.4 (0.6)	-
25	0.4 (0.6)	0.1 (0.2)	0.2 (0.2)	18.6 (0.9)	2.5 (1.3)	-
26	3.4 (2.8)	0.2 (0.3)	0.3 (0.4)	9.6 (1.7)	2.0 (0.5)	-
27	1.6 (0.7)	-	0.7 (0.7)	33.0 (2.0)	5.2 (2.0)	1.2 (1.1)
Total Sample	1.9 (1.7)	0.1 (0.3)	0.4 (0.8)	19.6 (7.6)	3.5 (2.2)	0.5 (0.7)

Table 10

Substantive Behaviors in Other-Paced Settings, Grade 5 Mathematics, by Class
(B-C period)

Class	Monitoring			Feedback	Presentation			Total Substantive
	AO	AQ	Total		EN	EP	Total	
1	--	3.8 (2.0)	3.8 (2.0)	12.6 (2.7)	2.6 (2.1)	11.6 (3.8)	14.1 (3.6)	26.4 (1.9)
3	--	4.2 (3.0)	4.2 (3.0)	7.1 (2.6)	1.4 (1.1)	4.9 (2.1)	6.2 (2.3)	17.5 (4.7)
4	--	11.6 (5.7)	11.6 (5.7)	10.5 (3.0)	0.9 (0.7)	10.1 (3.1)	11.0 (2.9)	33.0 (7.1)
5	--	7.2 (1.7)	7.2 (1.7)	4.9 (1.5)	1.0 (1.3)	4.4 (3.0)	5.4 (3.1)	17.5 (4.0)
6	--	0.9 (1.0)	0.9 (1.0)	3.3 (2.0)	0.8 (1.1)	1.8 (1.5)	2.6 (1.7)	6.8 (3.9)
8	--	0.4 (0.5)	0.4 (0.5)	0.9 (0.7)	--	2.2 (0.9)	2.2 (0.9)	3.5 (1.2)
9	--	3.8 (1.3)	3.8 (1.3)	2.0 (1.6)	0.2 (0.4)	4.9 (2.4)	5.1 (2.5)	10.9 (2.4)
10	--	2.2 (0.9)	2.2 (0.9)	8.9 (2.8)	0.8 (0.6)	10.0 (2.8)	10.8 (2.6)	21.8 (5.8)
11	--	0.9 (0.8)	0.9 (0.8)	3.5 (4.0)	1.9 (3.0)	1.4 (1.2)	3.3 (3.3)	7.7 (4.9)
12	--	--	--	2.8 (1.7)	--	0.3 (0.5)	0.3 (0.5)	3.1 (1.6)
14	--	8.8 (2.8)	8.8 (2.8)	5.2 (1.5)	2.1 (1.5)	6.8 (2.9)	8.8 (4.2)	22.8 (4.5)
16	--	1.8 (1.2)	1.8 (1.2)	3.3 (1.5)	1.0 (0.4)	4.2 (1.8)	5.2 (1.9)	10.3 (3.3)
17	--	0.2 (0.4)	0.2 (0.4)	0.3 (0.7)	0.1 (0.3)	2.1 (1.5)	2.2 (1.7)	2.7 (1.9)
18	--	0.3 (0.8)	0.3 (0.8)	2.3 (1.9)	--	1.8 (0.7)	1.8 (0.7)	4.4 (2.7)
19	--	10.0 (1.5)	10.0 (1.5)	8.3 (3.2)	0.3 (0.4)	1.1 (0.5)	1.4 (0.7)	19.7 (4.3)
21	--	1.3 (1.7)	1.3 (1.7)	9.0 (6.2)	--	3.6 (5.2)	3.6 (5.2)	13.9 (5.9)
23	--	4.7 (1.6)	4.7 (1.6)	19.2 (3,1)	2.3 (1.0)	4.2 (1.2)	6.5 (1.6)	30.4 (3.6)
24	--	1.3 (0.9)	1.3 (0.9)	1.3 (0.8)	0.1 (0.3)	8.9 (0.5)	9.0 (0.4)	11.7 (1.3)
25	--	--	--	0.5 (0.4)	2.5 (1.3)	4.3 (1.0)	6.8 (1.4)	7.2 (1.2)
26	--	--	--	0.7 (1.0)	0.3 (0.8)	--	0.3 (0.8)	1.0 (1.7)
27	--	4.1 (0.6)	4.1 (0.6)	16.0 (3.7)	4.7 (1.7)	5.2 (1.6)	9.9 (2.3)	29.9 (3.4)
Total Sample	--	3.3 (3.9)	3.3 (3.9)	6.1 (5.8)	1.1 (1.6)	4.5 (3.9)	5.5 (4.4)	14.9 (10.6)

Entries are: Mean (Standard Deviation)
- symbolizes no observed time

Table 11

Substantive Behaviors in Self-Paced Settings, Grade 5 Mathematics, by Class
(B-C period)

Class	Monitoring			Feedback	Presentation			Total Substantive
	AO	AQ	Total		EN	EP	Total	
1	--	0.2 (0.4)	0.2 (0.4)	1.3 (1.4)	3.0 (2.9)	--	3.0 (2.9)	4.5 (3.4)
3	--	0.7 (1.0)	0.7 (1.0)	1.5 (2.8)	--	0.3 (0.7)	0.3 (0.7)	2.5 (2.6)
4	--	0.2 (0.4)	0.2 (0.4)	0.7 (0.6)	1.0 (1.8)	0.2 (0.5)	1.2 (0.6)	2.1 (0.8)
5	0.1 (0.3)	0.1 (0.3)	0.2 (0.6)	1.4 (1.7)	2.8 (2.5)	--	2.8 (2.5)	4.5 (1.7)
6	--	--	--	1.2 (1.0)	2.0 (0.9)	--	2.0 (0.9)	3.2 (0.5)
8	--	--	--	0.5 (0.6)	0.9 (1.2)	--	0.9 (1.2)	1.4 (1.3)
9	--	0.3 (0.5)	0.3 (0.5)	2.3 (1.5)	0.7 (1.0)	0.2 (0.4)	0.9 (0.9)	3.5 (2.8)
10	--	--	--	1.4 (1.3)	0.1 (0.3)	--	0.1 (0.3)	1.6 (1.6)
11	--	--	--	1.7 (1.4)	1.5 (0.8)	--	1.5 (0.8)	3.2 (2.0)
12	--	--	--	0.7 (0.7)	4.7 (3.7)	--	4.7 (3.7)	5.5 (4.2)
14	0.1 (0.2)	--	0.1 (0.2)	0.3 (0.4)	0.5 (0.6)	0.1 (0.3)	0.7 (0.6)	1.1 (0.6)
16	--	--	--	0.6 (0.7)	4.0 (4.8)	--	4.0 (4.8)	4.6 (4.3)
17	--	--	--	1.1 (1.2)	1.0 (1.4)	--	1.0 (1.4)	2.0 (2.2)
18	0.4 (0.6)	0.5 (1.1)	0.8 (1.6)	1.8 (1.1)	2.5 (1.2)	--	2.5 (1.2)	5.1 (2.7)
19	--	--	--	0.5 (0.6)	0.3 (0.4	--	0.3 (0.4)	0.8 (0.7)
21	--	--	--	1.1 (1.1)	0.8 (1.0)	--	0.8 (1.0)	1.9 (1.3)
23	--	--	--	0.1 (0.3)	0.1 (0.2)	--	0.1 (0.2)	0.2 (0.3)
24	--	--	--	1.2 (1.3)	1.0 (0.9)	0.1 (0.3)	1.1 (0.8)	2.4 (2.0)
25	--	--	--	0.6 (0.9)	0.5 (0.5)	--	0.5 (0.5)	1.1 (1.3)
26	--	--	--	1.9 (2.6)	3.0 (4.0)	--	3.0 (4.0)	4.9 (6.5)
27	--	0.7 (1.0)	0.7 (1.0)	0.6 (0.9)	0.9 (2.0)	--	0.9 (2.0)	2.2 (3.8)
Total Sample	0.0 (0.2)	0.1 (0.5)	0.2 (0.6)	1.1 (1.3)	1.5 (2.2)	0.0 (0.2)	.15 (2.2)	2.7 (2.8)

Entries are: Mean (Standard Deviation)
- symbolizes no observed time

Table 12

Substantive and Procedural Behaviors, by Setting, in Grade 5 Mathematics, by Class (B-C Period)

	Self-Paced			Other-Paced		
Class	Total Substantive	Structure, Direct	Engagement Feedback	Total Substantive	Structure, Direct	Engagement Feedback
1	4.5 (3.4)	-	0.5 (0.5)	26.4 (1.9)	3.4 (2.5)	-
3	2.5 (2.6)	0.3 (0.8)	0.7 (1.0)	17.5 (4.7)	5.8 (2.7)	2.7 (1.1)
4	2.1 (0.8)	0.2 (0.4)	0.3 (0.7)	33.0 (7.1)	5.1 (1.3)	0.8 (1.0)
5	4.5 (1.7)	-	0.7 (0.8)	17.5 (4.0)	1.8 (0.6)	2.4 (0.9)
6	3.2 (0.5)	0.3 (0.7)	0.9 (0.7)	6.8 (3.9)	0.9 (1.1)	1.3 (0.9)
8	1.4 (1.3)	-	0.6 (0.7)	3.5 (1.2)	3.4 (0.8)	0.2 (0.3)
9	3.5 (2.8)	-	0.7 (1.0)	10.9 (2.4)	4.4 (2.6)	-
10	1.6 (1.6)	0.1 (0.3)	0.2 (0.3)	21.8 (5.8)	3.0 (1.9)	0.4 (0.5)
11	3.2 (2.0)	0.1 (0.3)	0.3 (0.8)	7.7 (4.9)	0.8 (1.2)	0.2 (0.4)
12	5.5 (4.2)	-	0.3 (0.7)	3.1 (1.6)	0.2 (0.4)	-
14	1.1 (0.6)	0.2 (0.5)	0.1 (0.3)	22.8 (4.5)	3.6 (1.8)	0.5 (0.8)
16	4.5 (4.3)	-	0.3 (0.4)	10.3 (3.3)	3.3 (0.6)	0.1 (0.3)
17	2.0 (2.2)	-	0.3 (0.5)	2.7 (1.9)	3.5 (1.7)	-
18	5.1 (2.7)	0.2 (0.6)	0.5 (0.6)	4.4 (2.7)	1.0 (0.8)	0.2 (0.5)
19	0.8 (0.7)	0.2 (0.6)	0.1 (0.3)	19.7 (4.3)	1.2 (0.8)	0.3 (0.6)
21	1.9 (1.3)	0.2 (0.5)	0.3 (0.8)	13.9 (5.9)	3.4 (2.1)	0.5 (0.6)
23	0.2 (0.3)	-	0.1 (0.2)	30.4 (3.6)	2.0 (1.3)	0.1 (0.2)
24	2.4 (2.0)	0.1 (0.3)	0.6 (0.5)	11.7 (1.3)	1.0 (1.1)	-
25	1.1 (1.3)	-	0.4 (0.6)	7.2 (1.2)	0.5 (0.4)	0.2 (0.4)
26	4.9 (6.5)	0.3 (0.7)	1.4 (2.4)	1.0 (1.7)	0.2 (0.4)	-
27	2.2 (3.8)	-	0.6 (1.3)	29.9 (3.4)	4.3 (3.7)	2.1 (1.0)
Total Sample	2.7 (2.8)	0.1 (0.4)	0.5 (0.8)	14.9 (10.6)	2.5 (2.3)	0.6 (1.0)

during seatwork. Notice, also, the number of classes for which there is almost no substantive instructional behavior in any setting. In classes 8 and 17 less than 5% of a student's mathematics time has any academic instructional behavior occurring. Classes 11, 12, 18, 25 and 26 are very similar to classes 8 and 17 in this respect. All of these classes spend at least 87% of the time in independent seatwork. This pattern is characteristic of a program where students work on individual assignments within some structured, sequential curriculum package. The teacher's major role is to set up the structure and, possibly, to provide general surveilance. Little actual instructional interaction is involved, except, presumably, when individual students need help. The size of the standard deviations in these classes indicates that some students are receiving instruction. On the whole, however, amount of instruction is low.

Individual data for two classes. The data presented in the previous section focused on general trends and differences between classes. The standard deviations provided some indication of differences within class. This section of the report shifts the focus to a more detailed look at life within two classes. The two classes chosen are fairly typical, although each has some distinguishing characteristics. The data presented are for individual students. The discussion aims to use the data tc describe life in the classroom as well as to cover some methodological issues.

The first class to be described is class 13 in grade 2. Appendix B provides some background information: Students in this class spent an average of 87 minutes per day in reading, with 70% of the time in self-paced settings. They spent an average of 45 minutes per day in mathematics, with 79% of the time in self-paced settings. Thus, they spent an average

amount of time on reading and more than average amount of time on mathematics when compared to other grade 2 classes. Their self-paced setting percentages are slightly higher than average, and considerably higher than for this same class during the A-B period.

Tables 13 and 14 present individual student data in reading and mathematics for class 13. The top half of each table is for other-paced settings; the bottom half for self-paced settings. The student number, in the leftmost column, identifies the individual students in class 13.

In reading, Table 13 reveals that feedback was the most frequent instructional behavior. Compared to other classes, class 13 had relatively little feedback in other-paced settings and somewhat more than average in self-paced settings. This represents a considerable shift when compared to analogous data for the A-B period (see Technical Report IV-3a; Filby, 1977). Table 13 also points out that almost all monitoring takes place in other-paced settings and that AQ accounted for the vast majority of this monitoring behavior. Note that the table contains a relatively large number of "zero" entries. In spite of this, there is considerable variability among students in most categories.

Table 14 presents comparable data for mathematics instruction in class 13. The total substantive behaviors are considerably lower in this class for both settings than the average values for grade 2. Feedback does not dominate the table as it does in reading. However, the monitoring pattern is very similar to that described for reading. As in reading, table 14 contains a large number of "zero" entries.

There is, however, a fair amount of planned presentation in other-paced settings. This is consistent with the general trend noted earlier. Notice that, for this class, there is relative consistency across students in the

Table 13

Instructional Behavior in Reading
Class 13 (Grade 2)
B-C period

Student	SUBSTANTIVE								PROCEDURAL	
	MONITORING			Feedback	Presentation			Total	Structure, Direct	Engagement Feedback
	AO	AQ	Total		EN	EP	Total			
Other-Paced Settings										
1301	--	4.6	4.6	8.0	0.9	2.0	2.9	15.5	6.4	--
1302	0.4	3.9	4.3	6.4	0.8	1.1	1.9	12.6	3.9	--
1303	--	3.7	3.7	5.4	0.4	1.2	1.7	10.7	2.9	0.3
1304	--	1.7	1.7	16.1	--	1.1	1.1	18.9	2.5	0.4
1305	--	4.5	4.5	8.2	0.3	1.6	1.9	14.6	5.3	0.3
Mean	0.1	3.7	3.7	8.8	0.5	1.4	1.9	14.5	4.2	0.2
Median	0.0	3.9	4.3	8.0	0.4	1.2	1.9	14.6	3.9	0.3
(S.D.)	(0.2)	(1.2)	(1.2)	(4.2)	(0.4)	(0.4)	(0.6)	(3.1)	(1.7)	(0.2)
Self-Paced Settings										
1301	--	--	--	3.0	0.7	--	0.7	3.7	0.4	0.9
1302	--	--	--	8.6	0.4	--	0.4	9.0	0.4	--
1303	0.4	--	0.4	6.2	--	--	--	6.6	0.5	0.8
1304	--	--	--	1.2	--	--	--	1.2	--	0.8
1305	--	--	--	2.8	1.6	--	1.6	4.3	0.4	0.4
Mean	0.1	0.0	0.1	4.4	0.5	0.0	0.5	5.0	0.3	0.6
Median	0.0	0.0	0.0	3.0	0.4	0.0	0.4	4.3	0.4	0.8
(S.D.)	(0.2)	(0.0)	(0.2)	(3.0)	(0.6)	(0.0)	(0.6)	(3.0)	(0.2)	(0.4)

Table 14

Instructional Behavior in Mathematics
Class 13 (Grade 2)
B-C period

Student	SUBSTANTIVE								PROCEDURAL	
	MONITORING			Feedback	Presentation			Total	Structure, Direct	Engagement Feedback
	AO	AQ	Total		EN	EP	Total			
Other-Paced Settings										
1301	--	4.5	4.5	1.4	--	3.0	3.0	8.8	4.9	--
1302	--	3.0	3.0	1.4	0.8	3.7	4.5	8.8	2.4	--
1303	--	3.0	3.0	2.0	0.8	4.5	5.2	10.2	3.6	0.8
1304	--	3.0	3.0	2.8	--	0.8	0.8	6.6	3.0	--
1305	--	3.9	3.9	1.4	--	2.5	2.5	7.7	7.6	--
Mean	0.0	3.5	3.5	1.8	0.3	2.9	3.2	8.5	4.3	0.2
Median	0.0	3.0	3.0	1.4	0.0	3.0	3.0	8.8	3.6	0.0
(S.D.)	(0.0)	(0.7)	(0.7)	(0.6)	(0.4)	(1.4)	(1.7)	(1.4)	(2.0)	(0.3)
Self-Paced Settings										
1301	--	--	--	3.2	0.8	--	0.8	4.1	--	--
1302	--	--	--	3.2	1.6	--	1.6	4.9	--	--
1303	--	0.8	0.8	0.8	1.6	--	1.6	3.1	--	0.8
1304	--	--	--	0.7	--	--	--	0.7	--	1.6
1305	--	0.8	0.8	--	1.7	--	1.7	2.5	0.8	--
Mean	0.0	0.3	0.3	1.6	1.1	0.0	1.1	3.1	0.2	0.5
Median	0.0	0.0	0.0	0.8	1.6	0.0	1.6	3.1	0.0	0.0
(S.D.)	(0.0)	(0.4)	(0.4)	(1.5)	(0.7)	(0.0)	(0.7)	(1.6)	(0.4)	(0.7)

amount of instructional behavior in mathematics. The standard deviation for total substantive other-paced is only 1.4%. This homogeneity suggests use of a whole-class format for part of the mathematics period, followed by seatwork.

A comparison of the difference between the median and the mean provides an indicator of the skewness in the distribution for a particular category. In most cases they are quite close together. Where they differ, the skewness can go in either direction. Sometimes there are one or more students with very high scores. In this case, the median is smaller than the mean. This happens particularly where the mean is small, as for AQ self-paced in Table 14. One might predict this direction of positive skewness for time-based measures, where zero is a fixed lower bound on scores. There are a number of instances, though, of distributions with low score outliers. This is noticeable in the distribution for EN in self-paced settings in Table 14. A particular student in a particular classroom may get either noticeably more or noticeably less of any particular behavior than other students in the class.

Looking at Tables 13 and 14, there are no striking patterns of interrelationship among instructional behaviors. A student who receives more monitoring does not necessarily receive more or less feedback or presentation. A student who receives more feedback in one situation does not necessarily receive more feedback in another situation.

Tables 15 and 16 present individual student data for class 18 in grade 5. As shown in Appendix B, this class spent 106 minutes per day on reading, with 75% of this time in self-paced settings. The class spent 43 minutes per day on mathematics, with 94% of the time in self-paced settings. Compared to other classes, a relatively large percentage of the

Table 15

Instructional Behavior in Reading
Class 18 (Grade 5)
B-C period

Student	SUBSTANTIVE								PROCEDURAL	
	MONITORING			Feedback	Presentation			Total	Structure, Direct	Engagement Feedback
	AO	AQ	Total		EN	EP	Total			
Other-Paced Settings										
1801	--	1.8	1.8	9.7	--	0.3	0.3	11.8	4.4	0.3
1802	0.4	4.6	5.0	13.0	--	0.5	0.5	18.5	2.7	--
1803	--	2.0	2.0	9.2	--	0.3	0.3	11.5	4.5	0.3
1804	--	2.7	2.7	11.6	--	--	--	14.3	3.8	--
1805	--	2.4	2.4	14.4	--	0.4	0.4	17.3	1.6	--
1806	--	1.7	1.7	12.4	--	0.4	0.4	14.5	1.8	0.3
Mean	0.1	2.5	2.6	11.7	0.0	0.3	0.3	14.7	3.1	0.1
Median	0.0	2.2	2.2	12.0	0.0	0.4	0.4	14.4	3.3	0.2
(S.D.)	(0.2)	(1.1)	(1.2)	(2.0)	(0.0)	(0.2)	(0.2)	(2.8)	(1.3)	(0.1)
Self-Paced Settings										
1801	--	--	--	0.3	0.6	--	0.6	0.8	--	--
1802	0.3	0.3	0.5	1.3	--	--	--	1.8	--	1.2
1803	--	--	--	3.6	--	--	--	3.6	--	0.6
1804	--	--	--	2.9	0.4	--	0.4	3.2	0.3	0.6
1805	--	--	--	0.6	0.5	--	0.5	1.1	--	--
1806	1.0	0.3	1.3	1.8	--	--	--	3.1	--	0.8
Mean	0.2	0.1	0.3	1.7	0.2	0.0	0.2	2.3	0.0	0.5
Median	0.0	0.0	0.0	1.6	0.2	0.0	0.4	2.5	0.0	0.6
(S.D)	(0.4)	(0.2)	(0.5)	(1.3)	(0.3)	(0.0)	(0.3)	(1.2)	(0.1)	(0.5)

Table 16

Instructional Behavior in Mathematics
Class 18 (Grade 5)
B-C period

Student	SUBSTANTIVE								PROCEDURAL	
	MONITORING			Feedback	Presentation			Total	Structure, Direct	Engagement Feedback
	AO	AQ	Total		EN	EP	Total			
Other-Paced Settings										
1801	--	--	--	1.6	--	2.4	2.4	3.9	2.2	--
1802	--	2.0	2.0	6.1	--	1.4	1.4	10.0	--	--
1803	--	--	--	1.9	--	2.9	2.9	4.8	0.8	--
1804	--	--	--	1.4	--	1.6	1.6	3.0	0.8	--
1805	--	--	--	1.7	--	0.9	0.9	2.6	1.7	--
1806	--	--	--	0.7	--	1.5	1.5	2.2	0.7	1.2
Mean	0.0	0.3	0.3	2.3	0.0	1.8	1.8	4.4	1.0	0.2
Median	0.0	0.0	0.0	1.7	0.0	1.6	1.6	3.5	0.8	0.0
(S.D.)	(0.0)	(0.8)	(0.8)	(1.9)	(0.0)	(0.7)	(0.7)	(2.7)	(0.8)	(0.5)
Self-Paced Settings										
1801	--	--	--	1.4	3.1	--	3.1	4.6	--	0.8
1802	1.4	2.7	4.1	3.8	2.5	--	2.5	10.4	--	--
1803	--	--	--	1.7	2.7	--	2.7	4.4	--	1.0
1804	--	--	--	0.8	4.2	--	4.2	5.0	--	--
1805	0.9	--	0.9	0.9	0.7	--	0.7	2.4	--	--
1806	--	--	--	2.1	1.9	--	1.9	4.0	1.5	1.3
Mean	0.4	0.5	0.8	1.8	2.5	0.0	2.5	5.1	0.2	0.5
Median	0.0	0.0	0.0	1.6	2.6	0.0	2.6	4.5	0.0	0.4
(S.D.)	(0.6)	(1.1)	(1.6)	(1.1)	(1.2)	(0.0)	(1.2)	(2.7)	(0.6)	(0.6)

time is self-paced.

Table 15 and 16 present individual student data for class 18 in grade 5. As shown in Appendix B, this class spent 106 minutes per day on reading, with 75% of this time in self-paced settings. The class spent 43 minutes per day on mathematics, with 94% of the time in self-paced settings. Compared to other classes, a relatively large percentage of the time is self-paced.

Table 15 shows the small amount of instructional behavior received by students during self-paced reading. This small amount is slightly above average for the quadrant. Notice that in contrast to the other-paced setting, the self-paced setting does allow some explanation for students 1, 4 and 5 which is specifically geared to individual student need.

Table 16 shows that the students in this class receive a small amount of instructional behavior during mathematics in other-paced settings. However, they receive somewhat more instructional behavior than average in self-paced settings. Note that planned explanation is carried out only in other-paced settings while explanation based on individual student need occurs only in self-paced settings. Notice the proportion of "zero" entries in this table. In spite of this point, this class has almost twice as much instructional behavior during self-paced mathematics as the average.

Correlations between instructional behaviors. Tables 17 through 20 provide intercorrelation matrices for the seven instructional behaviors. Entries below the diagonal in each table are for self-paced settings. Entries above the diagonal are for other-paced settings. Entries in the diagonal, printed in italic type, show the correlation of the same behavior across settings. The means and standard deviations are reported from earlier tables for ease of reference in interpreting correlations.

Table 17

Correlations of Instructional Behaviors Within and Across Settings
Grade 2 Reading for B-C period

		AO	AQ	AF	EN	EP	SD	TE	Other-Paced Mean	Other-Paced S.D.
Academic Observation	AO	*11*	06	29	-09	-01	-08	04	0.2	0.4
Academic Question	AQ	17	*-20*	13	-08	26	24	-06	6.0	3.2
Academic Feedback	AF	29	29	*12*	08	30	-07	30	13.0	6.3
Explanation--Need	EN	08	29	13	*10*	15	02	-03	0.3	0.4
Explanation--Planned	EP	55	23	22	21	*18*	17	07	1.9	1.5
Structure, Direct	SD	-02	05	04	-01	01	*15*	01	4.5	2.6
Engagement Feedback	TE	23	15	13	-01	35	15	*04*	0.8	1.5
Self-Paced Mean		0.2	0.3	3.4	1.2	0.1	0.4	0.9		
Self-Paced S.D.		0.4	0.5	2.5	1.1	0.3	0.5	1.2		

Note:

Entries below the diagonal are for self-paced settings. Entries above the diagonal are for other-paced settings. Entries in the diagonal are correlations for the same behavior across settings. The values entering into each correlation, and the means of those values, are percentages of total reading time. All correlations larger than 18 are significant at the .025 level with a sample size of 139.

Table 18

Correlations of Instructional Behaviors Within and Across Settings
Grade 2 Mathematics for B-C period

		AO	AQ	AF	EN	EP	SD	TE	Other-Paced Mean	Other-Paced S.D.
Academic Observation	AO	*37*	-10	25	-04	04	16	10	0.1	0.3
Academic Question	AQ	10	*00*	33	10	57	19	06	5.1	4.8
Academic Feedback	AF	16	10	*-31*	-04	43	08	28	4.9	4.1
Explanation--Need	EN	19	03	22	*07*	10	11	06	0.9	1.5
Explanation--Planned	EP	26	14	20	41	*01*	06	17	3.3	3.1
Structure, Direct	SD	03	07	08	05	02	*-11*	-10	3.6	3.2
Engagement Feedback	TE	38	20	10	12	26	08	*-02*	0.6	1.0
Self-Paced Mean		0.3	0.1	2.4	2.2	0.2	0.4	1.0		
Self-Paced S.D.		0.8	0.3	2.3	2.2	0.6	0.7	1.6		

Note:

Entries below the diagonal are for self-paced settings. Entries above the diagonal are for other-paced settings. Entries in the diagonal are correlations for the same behavior across settings. The values entering into each correlation, and the means of those values, are percentages of total time in math. All correlations larger than 18 are significant at the .025 level with a sample size of 139.

Table 19

Correlations of Instructional Behaviors Within and Across Settings
Grade 5 Reading for B-C period

		AO	AQ	AF	EN	EP	SD	TE	Other-Paced Mean	Other-Paced S.D.
Academic Observation	AO	*-06*	26	17	30	50	20	16	0.1	0.2
Academic Question	AQ	08	*07*	-01	46	25	-01	24	5.0	3.2
Academic Feedback	AF	08	21	*-10*	01	10	35	-05	12.1	5.8
Explanation--Need	EN	-01	00	11	*02*	23	06	22	0.3	0.4
Explanation--Planned	EP	24	-08	17	02	*15*	12	12	2.1	2.1
Structure, Direct	SD	-04	07	06	18	15	*-20*	24	3.5	2.2
Engagement Feedback	TE	-01	06	08	-04	-04	-02	*16*	0.5	0.7
Self-Paced Mean		0.1	0.1	1.2	0.4	0.0	0.1	0.4		
Self-Paced S.D.		0.2	0.2	1.4	0.6	0.2	0.3	0.8		

Note:

Entries below the diagonal are for self-paced settings. Entries above the diagonal are for other-paced settings. Entries in the diagonal are correlations for the same behavior across settings. The values entering into each correlation, and the means of those values, are percentages of total reading time. All correlations larger than 18 are significant at the .025 level with a sample size of 123.

Table 20

Correlations of Instructional Behaviors Within and Across Settings
Grade 5 Mathematics for B-C period

		AO	AQ	AF	EN	EP	SD	TE	Other-Paced Mean	Other-Paced S.D.
Academic Observation	AO	--*	--	--	--	--	--	--	0.0	0.0
Academic Question	AQ	40	*08*	36	17	32	26	23	3.3	3.4
Academic Feedback	AF	13	23	*-20*	35	22	21	14	6.1	5.8
Explanation--Need	EN	-01	02	17	*-03*	18	10	22	1.1	1.6
Explanation--Planned	EP	-03	06	-05	-13	*12*	36	05	4.5	3.9
Structure, Direct	SD	-05	-03	11	01	12	*09*	26	2.5	2.3
Engagement Feedback	TE	-10	26	17	16	00	00	*10*	0.6	1.0
Self-Paced Mean		0.0	0.1	1.1	1.5	0.0	0.1	0.5		
Self-Paced S.D.		0.2	0.5	1.3	2.2	0.2	0.4	0.8		

Note:

Entries below the diagonal are for self-paced settings. Entries above the diagonal are for other-paced settings. Entries in the diagonal are correlations for the same behavior across settings. The values entering into each correlation, and the means of those values, are percentages of total time in math. All correlations larger than 18 are significant at the .025 level with a sample size of 123.

* No AO behaviors were observed in other-paced settings, hence this variable does not correlate with any other variables in the matrix.

These correlation matrices are only a first step in understanding the interrelationships among instructional behaviors. As such, they should not be overinterpreted. One follow-up will be to investigate the effect of transformations on these proportional data. The skewness of the overall distributions and the generally low scores suggest that a transformation would be in order. This may increase, although probably to a minor degree, the size of the correlations.

A few trends are apparent in the correlation matrices, particularly looking across quadrants. One is that the correlations are; with a few exceptions, generally low (even given the caveat above).

Correlations are slightly higher in other-paced settings at grade 5 and slightly lower in other-paced settings at grade 2. To some extent this pattern follows the pattern in standard deviations when other- and self-paced settings are compared. The correlations provide some evidence of cohesion among instructional behaviors in other-paced settings and in self-paced settings.

When the correlations in Tables 17 through 20 are compared with similar data for the A-B period (see Technical Note IV-3a; Filby, 1977), several points are illustrated. First in both sets of tables, the number of coefficients greater than 0.18 is much greater than would be expected by chance. Second, there is a tendency for the correlations in the B-C period to be larger than those presented for the A-B period. Third, the relationships among variables appear to be complex.

Source and focus. The last set of tables presents information on the source and focus of instructional moves within setting.

In other-paced settings, each instructional behavior has an identified source and an identified focus, as outlined in Figure 1. Table 21 breaks

Table 21

Substantive Behaviors in Other-Paced Setting, by Source and Focus
(B-C period)

Specific Move	Source	Focus	Grade 2 Reading	Grade 2 Math	Grade 5 Reading	Grade 5 Math
Academic Observation	Teacher	T	0.0 (0.1)	0.0 (0.2)	0.0 (0.1)	--
		G	0.1 (0.2)	0.1 (0.3)	0.0 (0.2)	--
	Other Adult	T	--	--	--	--
		G	0.1 (0.3)	0.0 (0.1)	--	--
	Student	T	--	--	--	--
		G	0.0 (0.0)	--	--	--
Academic Question	Teacher	T	0.7 (1.0)	0.5 (1.0)	0.5 (0.9)	0.4 (1.1)
		G	4.7 (2.9)	4.1 (4.2)	4.3 (2.8)	2.8 (3.5)
	Other Adult	T	0.1 (0.2)	0.0 (0.1)	0.0 (0.0)	0.0 (0.2)
		G	0.4 (0.8)	0.4 (1.0)	0.0 (0.1)	--
	Student	T	0.0 (0.1)	0.0 (0.1)	0.0 (0.1)	--
		G	0.0 (0.1)	0.1 (0.3)	0.2 (0.6)	0.0 (0.1)
Feedback	Teacher	T	1.2 (1.2)	0.3 (0.6)	0.8 (0.8)	0.3 (0.5)
		G	3.4 (2.3)	1.7 (2.0)	3.3 (2.3)	2.3 (3.4)
	Other Adult	T	0.5 (1.0)	0.1 (0.3)	0.0 (0.1)	0.0 (0.3)
		G	0.4 (0.7)	0.1 (0.3)	0.1 (0.2)	0.1 (0.3)
	Student	T	0.2 (0.5)	0.1 (0.2)	0.1 (0.2)	0.0 (0.1)
		G	6.3 (4.0)	2.3 (2.3)	7.6 (4.3)	2.8 (4.1)
	Curriculum	T	0.0 (0.2)	--	--	--
		G	0.9 (1.5)	0.4 (1.2)	0.3 (0.4)	0.6 (1.3)
Explanation -- Need	Teacher	T	0.1 (0.2)	0.1 (0.4)	0.0 (0.1)	0.2 (0.8)
		G	0.2 (0.3)	0.6 (1.3)	0.3 (0.4)	0.8 (1.3)
	Other Adult	T	0.0 (0.0)	0.1 (0.4)	0.0 (0.0)	0.0 (0.2)
		G	0.0 (0.1)	0.1 (0.3)	0.0 (0.1)	--
	Student	T	0.0 (0.0)	0.0 (0.1)	--	--
		G	--	--	0.0 (0.0)	0.0 (0.2)
Explanation --Planned	Teacher	T	0.0 (0.1)	0.0 (0.3)	0.0 (0.0)	0.0 (0.1)
		G	1.7 (1.3)	3.2 (3.0)	2.0 (2.0)	4.2 (3.8)
	Other Adult	T	--	--	--	--
		G	0.2 (0.4)	0.1 (0.3)	0.1 (0.2)	0.1 (0.8)
	Student	T	--	--	--	--
		G	0.0 (0.0)	0.0 (0.1)	0.1 (0.4)	0.2 (0.5)

Note: Under Focus, T = Target Student, G = Group

down substantive behaviors in other-paced setting according to source and focus. For most instructional moves, the most frequent combination of source and focus is from teacher to group. The major exception to this pattern is for feedback. The most frequent form of feedback is from student to group. This is especially true in reading.

Several types of classroom activities could result in feedback from a student source. One, which applies across subject matter, is when a student reads aloud the answers to a class assignment. In this process the target student hears the correct answer from another student and thus knows whether his own answer was right or wrong. A similar situation would occur during a group discussion/recitation when the teacher asks a question of a non-target student. Presumably all students, including the target, are expected to frame their own answers internally. The student's oral answer thus provides feedback to the target. In reading, still another situation occurs. During oral reading one student reads aloud while the others read silently. For the student who is reading silently, the oral reading provides feedback as to whether his own rendition was right or wrong. Presumably this constant feedback is one of the benefits of and reasons for a reading circle situation. (If the student reads incorrectly, the teacher intervenes and the instructional move is then teacher feedback.)

Notice that other adults provide instruction more often in grade 2 than in grade 5, with the highest concentration in grade 2 reading. There is considerable variability in amount of other-adult time, as shown by the standard deviations. Some students receive other-adult instruction and other students do not. Within the other-adult source, the feedback is

most frequent. Aides tend to help out with keeping individual students on track rather than providing primary instruction. Compared with the data from the A-B period, there is less other-adult instruction in the B-C period.

Table 22 shows procedural behavior in other-paced settings. Other adults do occasionally help give directions. Otherwise, the domain belongs exclusively to the teacher.

Tables 23 and 24 provide information on source of self-paced instruction. (By definition the focus of such behavior is the target student.) Student as a source of feedback drops down in self-paced settings. Other adults remain as a moderate source, especially in grade 2. Other adults provide approximately half as much instruction in grade 2 self-paced settings as teachers do. This is a higher ratio than for other-paced settings. This trend appears to be in keeping with the interpretation that other adults concentrate on problem solving with individual students.

Table 22

Procedural Behaviors in Other-Paced Settings, by Source and Focus
(B-C period)

Specific Move	Source	Focus	Grade 2 Reading	Grade 2 Math	Grade 5 Reading	Grade 5 Math
Structure, Direct	Teacher	T	0.1 (0.2)	0.1 (0.3)	0.0 (0.1)	0.1 (0.3)
		G	4.1 (2.5)	3.4 (3.2)	3.4 (2.2)	2.4 (2.2)
	Other Adult	T	0.0 (0.1)	0.0 (0.1)	0.0 (0.0)	--
		G	0.2 (0.5)	0.1 (0.3)	0.0 (0.2)	0.0 (0.2)
	Student	T	--	--	--	--
		G	0.0 (0.1)	0.0 (0.1)	0.0 (0.1)	--
Task Engagement Feedback	Teacher	T	0.1 (0.3)	0.1 (0.4)	0.1 (0.2)	0.1 (0.3)
		G	0.6 (1.3)	0.4 (0.8)	0.3 (0.5)	0.5 (1.0)
	Other Adult	T	0.0 (0.1)	0.0 (0.3)	0.0 (0.0)	--
		G	0.0 (0.2)	0.1 (0.3)	0.1 (0.3)	--
	Student	T	0.0 (0.0)	--	--	--
		G	--	--	--	--

Table 23

Substantive Behaviors in Self-Paced Settings, by Source
(B-C period)

General Function	Specific Move	Source	Grade 2				Grade 5			
			Reading		Math		Reading		Math	
Moni-	Academic	Teacher	0.1	(0.3)	0.2	(0.6)	0.1	(0.2)	0.0	(0.2)
toring	Obser-	Other Adult	0.1	(0.2)	0.1	(0.5)	0.0	(0.1)	0.0	(0.1)
	vation	Total	0.2	(0.4)	0.3	(0.8)	0.1	(0.2)	0.0	(0.2)
	Academic	Teacher	0.2	(0.4)	0.1	(0.3)	0.1	(0.2)	0.1	(0.4)
	Question	Other Adult	0.1	(0.3)	0.0	(0.1)	0.0	(0.1)	0.0	(0.1)
		Total	0.3	(0.5)	0.1	(0.3)	0.1	(0.2)	0.1	(0.5)
	Total	Teacher	0.3	(0.5)	0.3	(0.7)	0.2	(0.3)	0.1	(0.5)
		Other Adult	0.2	(0.4)	0.1	(0.5)	0.0	(0.1)	0.0	(0.1)
		Total	0.5	(0.7)	0.4	(0.9)	0.2	(0.4)	0.2	(0.6)
Feedback	Academic	Teacher	1.4	(1.1)	1.2	(1.5)	0.7	(0.9)	0.6	(1.0)
	Feedback	Other Adult	0.5	(0.8)	0.6	(1.0)	0.1	(0.7)	0.1	(0.3)
		Student	1.4	(1.9)	0.5	(0.9)	0.3	(0.6)	0.3	(0.8)
		Curriculum	0.1	(0.3)	0.1	(0.3)	0.0	(0.1)	0.0	(0.2)
		Total	3.4	(2.5)	2.4	(2.3)	1.2	(1.4)	1.1	(1.3)
Presen-	Explain	Teacher	0.8	(0.9)	1.4	(1.5)	0.4	(0.5)	1.0	(1.6)
tation	--Need	Other Adult	0.3	(0.5)	0.6	(1.2)	0.0	(0.1)	0.2	(1.0)
		Student	0.2	(0.4)	0.3	(0.6)	0.1	(0.2)	0.2	(0.7)
		Total	1.2	(1.1)	2.2	(2.2)	0.4	(0.6)	1.5	(2.2)
	Explain	Teacher	0.0	(0.2)	0.1	(0.3)	0.0	(0.2)	0.0	(0.2)
	-Planned	Other Adult	0.0	(0.2)	0.1	(0.3)	0.0	(0.0)	--	
		Student	0.0	(0.0)	0.1	(0.3)	0.0	(0.0)	--	
		Total	0.1	(0.3)	0.2	(0.6)	0.0	(0.2)	0.0	(0.2)
	Total	Teacher	0.8	(0.9)	1.4	(1.6)	0.4	(0.6)	1.1	(1.5)
		Other Adult	0.3	(0.5)	0.7	(1.4)	0.0	(0.1)	0.2	(1.0)
		Student	0.2	(0.4)	0.3	(0.7)	0.1	(0.2)	0.2	(0.7)
		Total	1.3	(1.2)	2.4	(2.5)	0.5	(0.6)	1.5	(2.2)
Total	Total	Teacher	2.5	(1.6)	2.9	(2.6)	1.2	(1.2)	1.9	(2.2)
		Other Adult	1.0	(1.4)	1.4	(2.2)	0.2	(0.9)	0.3	(1.0)
		Student	1.6	(2.1)	0.8	(1.2)	0.4	(0.6)	0.6	(1.1)
		Curriculum	0.1	(0.3)	0.1	(0.3)	0.0	(0.1)	0.0	(0.2)
		Total	5.2	(3.3)	5.2	(4.1)	1.9	(1.7)	2.7	(2.8)

Table 24

Procedural Behaviors in Self-Paced Settings, by Source
(B-C period)

Specific Move	Source	Grade 2		Grade 5	
		Reading	Math	Reading	Math
Structure, Direct	Teacher	0.4 (0.5)	0.3 (0.6)	0.1 (0.2)	0.1 (0.3)
	Other Adult	0.1 (0.2)	0.1 (0.3)	0.0 (0.1)	0.0 (0.1)
	Total	0.4 (0.5)	0.4 (0.7)	0.1 (0.3)	0.1 (0.4)
Task Engagement Feedback	Teacher	0.8 (1.1)	0.8 (1.4)	0.4 (0.8)	0.4 (0.8)
	Other Adult	0.1 (0.3)	0.2 (0.5)	0.0 (0.1)	0.0 (0.2)
	Total	0.9 (1.2)	1.0 (1.6)	0.4 (0.8)	0.5 (0.8)

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Appendix A

Outline of Observation Categories

Outline of observation categories.

The following is a list of the observation categories with very brief descriptions of each.

General Content Categories

(General content includes periods other than reading or mathematics instruction. Any event that is coded in a general content category is not coded for any other categories, such as student and teacher behaviors.)

W = Wait

Wait refers to periods of no activity and no movement between activities. This would often occur when a student finishes his/her work early and no other activity is initiated.

T = Transition

Transition refers to periods of change from one activity to another. This might include lining up, taking seats, or quieting down before the next activity.

M = Management

Management refers to the conduct of class business that is unrelated to any instructional activity. This includes such things as the collection or distribution of milk money and making arrangements for a field trip.

B = Break

Break includes any recreational or free period, such as recess, unstructured P.E., lunch, milk breaks, and leaving class to use the restroom.

N = Nonacademic instruction

Nonacademic instruction refers to a wide range of organized classroom

activities that do not fall within a fairly narrow domain of academic instruction. Nonacademic instruction includes flag salutes, sharing, storytime, music, art, and structured P.E.

O = Other academic instruction

Other academic instruction refers to academic instruction other than reading and mathematics. This includes social studies and science (where there is no reading or mathematics content).

blank circle (between "O" and "DC" in the seventh column) = Absent

Reading Content Categories:

(The reading content categories correspond generally to categories found in the Reading Glossary for the daily logs at grades 2 and 5. The same observational categories are used at both grades. Therefore, some available categories will be observed primarily at one grade or the other).

DC = Decoding

WS = Word Structure

CP = Comprehension

WM = Word Meaning

PT = Practice, reading

SP = Spelling

RR = Reading Related

Reading related includes other reading content that is at or above the level of the tests to be used. Library skills would be coded RR.

RB = Reading, Below the test level

Reading below the test level includes other reading content that is at a lower level than the tests that will be used. Copying or handwriting would be coded RB.

Mathematics Content Categories:

(The mathematics content categories correspond generally to categories found in the Mathematics Glossary for the daily logs at grades 2 and 5. The same observational categories are used at both grades. Therefore, some available categories will be observed primarily at one grade or the other.)

AS = Addition and Subtraction with no regrouping, using the standard short form

RG = Regrouping, addition and subtraction using the standard short form

CT = Computational Transfer

PV = Place Value

Place value includes addition and subtraction without or with regrouping where an instructional algorithm involving a place value transformation is used.

MU = Multiplication

DI = Division

FR = Fractions

SA = Spatial Application

Spatial application includes geometry, measurement, and graphing without word problems.

VA = Verbal Application

Verbal application includes word problems.

MR = Mathematics Related

Mathematics related includes other mathematics content that is at or above the level of the tests to be used. Decimals would be coded MR.

MB = Mathematics, Below the test level

Mathematics below the test level includes other mathematics content that is at a lower level than the tests that will be used. Developmental

activities such as learning to count up to ten would be coded MB.

Setting Categories:

S = Self-paced

Self-paced includes activities where the student works at his own pace (such as seatwork).

O = Other-paced

Other-paced includes activities where the student must work at the pace of other students (such as group activities).

Difficulty Level Categories:

E = Easy

Easy includes review and practice. Few errors are made and little effort is required of the student.

M = Medium

Medium difficulty includes any activities between "easy" and "hard."

H = Hard

Hard includes those activities that the student cannot carry out. Many errors and few correct responses (about what you would expect by chance) occur.

Learner Moves:

(Learner moves coded must be those of the target student being sampled.)

EW = Engaged, Written response

EO = Engaged, Oral response (statement or question)

EC = Engaged, Covert response

Engaged, Covert responses includes any student response that is generally

not observable. This includes most activities where the student is simply thinking, such as listening to the teacher or reading silently.

ED = Engaged, Directions

The above categories for engaged learner moves must involve the substantive content of the reading or mathematics coded. Engaged, directions includes any written, oral, or covert student response that involves only the directions to the reading or mathematics activity.

NI = Not engaged, Interim activity

Not engaged, interim activity refers to the nonacademic interim tasks that are part of a reading or mathematics task. This includes sharpening pencils, turning in and passing out papers, and getting books.

NW = Not engaged, Waiting for help

Not engaged, waiting for help refers to periods where the student has stopped working on a reading or mathematics task because he is waiting for help.

NO = Not engaged, Off-task

Not engaged, off-task refers to periods where the student is inappropriately disengaged from a reading or mathematics task. This would include socializing, daydreaming, and misbehavior during a reading or mathematics task.

Instructor Moves:

(An instructor move is coded only if it is received by the target student and is therefore relevant to the behavior coded for the target student at that moment. For example, if the student continues to work on a reading assignment while the teacher gives instructions to get out the mathematics text, then the student engagement in reading is coded, with no instructor move for that student.)

AO = Academic Observational monitoring

Academic observational monitoring consists of the instructor looking at or listening to a student response during a reading or mathematics task.

AF = Academic Feedback

Academic feedback refers to the teacher informing the student that a written or oral response was correct or incorrect. Any explanation is more than academic feedback.

AQ = Academic Question

An academic question consists of the teacher asking the student for a written or oral answer.

EN = Explanation, Need

Explanation, need refers to instructional explanation provided to the student to satisfy a clear and immediate student need for help.

EP = Explanation, Planned

Explanation, planned refers to instructional explanation provided according to previous plans of the instructor. This would include lectures. Explanation, planned may involve a general student need, but not an immediate student need.

SD = Structure or Direct

As with the other instructor moves, this move must be relevant to the reading or mathematics task coded at the same moment. Structure or direct refers to statements of goals or objectives and the provision or instructions or directions.

TE = Task Engagement feedback

Task engagement feedback refers to the instructor's moves to control inappropriate student behavior, such as off task behavior, or to praise appropriate behavior, such as good work habits. However,

inappropriate and appropriate student behavior does not refer, here, to correct and incorrect responses to a reading or mathematics task. Teacher feedback for these responses would, as discussed above, be coded AF.

Source of Instructor Move:

T = Teacher

Teacher refers, here, to the instructor in charge of the class unit in which the observation takes place. This might be a reading or mathematics specialist during the student's reading or mathematics laboratory period.

O = Other adult

Other adult refers to an instructor who is not in charge of the class unit. This might be an aide or parent volunteer.

S = Student

Student is coded as the source of instruction when the target student is receiving instructional assistance (usually tutoring) from another student.

C = Curriculum

Curriculum is coded as the source of instruction when answers provided in the curriculum materials are used by the student to obtain academic feedback. Therefore, the source code, C, is used only with the instructor move code, AF.

Focus of Instructor Move:

T = Target

The target student is the focus of the instructor move only when that move is directed specifically to that individual target student.

G = Group

A group is the focus of the instructor move when the target student of the moment is in a group (two or more) that receives an instructor move. The group is coded when the instructor move is directed to the group as a whole or to some student in the group other than the target student (so long as the move is relevant to the target student).

Appendix B

Allocated Time and Setting Percentages

Table B1

Allocated Time and Setting Percentages,
by Content Area, in Grade 2 (B-C period)

Class	Reading			Mathematics		
	Mean Minutes Per Day	Setting Percentages		Mean Minutes Per Day	Setting Percentages	
		Self-Paced	Other-Paced		Self-Paced	Other-Paced
1	106	88	12	24	90	10
2	79	62	38	41	83	17
3	83	73	27	42	70	30
4	47	71	29	51	73	27
5	96	51	49	29	56	44
6	65	51	49	24	71	29
7	93	63	37	37	79	21
8	75	68	32	42	87	13
9	90	65	35	37	86	14
10	93	61	39	35	83	17
11	118	67	33	34	90	10
12	83	66	34	37	87	13
13	87	70	30	45	79	21
14	103	52	48	36	75	25
15	96	71	29	43	79	21
16	66	67	33	16	62	38
17	118	69	31	32	61	39
18	101	53	47	39	67	33
19	90	65	35	22	68	32
20	80	62	38	43	93	7
21	82	76	24	37	81	19
22	86	58	42	43	52	48
23	85	69	31	38	60	40
24	90	62	38	36	72	28
25	78	44	56	43	92	8
Total Sample	88	63	46	36	73	27

Table B2

Allocated Time and Setting Percentages,
by Content Area, in Grade 5 (B-C period)

Class	Reading			Mathematics		
	Mean Daily Time	Setting Percentages		Mean Daily Time	Setting Percentages	
		Self-Paced	Other-Paced		Self-Paced	Other-Paced
1	102	63	37	41	63	37
3	80	58	42	20	69	31
4	92	61	39	29	49	51
5	110	71	29	42	75	25
6	68	72	28	53	81	19
8	104	76	24	33	87	13
9	127	69	31	36	81	19
10	137	72	28	40	72	28
11	119	67	33	41	91	9
12	137	70	30	45	96	4
14	130	55	45	62	52	48
16	95	49	51	44	83	17
17	108	79	21	47	90	10
18	106	75	25	43	94	6
19	108	78	22	43	66	34
21	129	66	34	32	77	23
23	121	74	26	56	56	44
24	95	85	15	73	86	14
25	129	75	25	64	91	9
26	102	85	15	41	99	1
27	88	50	50	44	46	54
Total Sample	110	69	31	44	76	24